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PIKETON INITIATIVE FOR NUCLEAR INDEPENDENCE

Front Matter

Acknowledgement

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The GNEP program is in an early stage of development, specific information related to the GNEP facilities and corresponding impacts on the environment and the applicability of regulations and the specific permits cannot be finalized at this time. In this document, the ePIFNI team utilized expert judgment in developing parameters for this Detailed Site Study. Neither ePIFNI nor any of its contractors or subcontractors, nor any person acting on behalf of either makes any warranty with respect to the accuracy, completeness, or usefulness of the information contained in this document; or assumes any liabilities with respect to the use of or for damages resulting from the use of any information disclosed in this report.

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Executive Summary

On behalf of the Southern Ohio Nuclear Integration Cooperative, LLC (SONIC), the Piketon Initiative for Nuclear Independence (ePIFNI) and its teammates, Southern Ohio Diversification Initiative (SODI), AREVA, Washington Group, Battelle Memorial Institute, and Wastren Advantage, Inc., submit this report in fulfillment of its requirements under DOE Financial Assistance Agreement DE-FG07-07ID14795. In that award, the Department of Energy (DOE) directed ePIFNI to conduct activities in the following areas:

- Identify the site for the Consolidated Fuel Treatment Center (CFTC) and for the Advanced Recycling Reactor (ARR),
- Identify local, regional, state and national regulatory and environmental permits required for this facility, including legislative or regulatory prohibitions that might prevent siting Global Nuclear Energy Partnership (GNEP) facilities at the Portsmouth Reservation, Piketon, Ohio, and
- Perform up to three informal community-involvement activities to inform state and local stakeholders of the purpose of the GNEP siting studies and obtain their opinions.

These activities have been completed. ePIFNI has prepared two documents to support the Detailed Site Study: this report describes the Affected Environment and identifies the Regulatory and Environmental Permitting/Licensing Requirements; a separate report provides a *Summary of the Community Involvement Activities*. The conclusion of our report is that PORTS would be an excellent site for location of the GNEP facilities. The PORTS site possesses numerous physical attributes that would benefit the siting, construction, and operations of the GNEP facilities and there are no regulatory issues that would prohibit siting it on the DOE reservation.”

The Global Nuclear Energy Partnership (GNEP) program is in an early stage of development, specific information related to the GNEP facilities and corresponding impacts on the environment and the applicability of regulations and the specific permits cannot be finalized at this time.

Affected Environment: Two 500-acre sites were proposed for GNEP facilities at the Portsmouth Reservation (PORTS). These sites are well suited for the GNEP CFTC and the ARR:

- The PORTS site is federally owned.
- The sites meet and exceed the minimum siting criteria:
 1. Size. PORTS proposed two-500 acre sites and has identified additional land that could be made available
 2. Hydrology. The site is well above the 100 year flood plain.
 3. Electricity Capability. Electrical power is supplied from Ohio Valley Electric Corporation’s external 345 kilovolts (kV) power grid

at 345 kV through four switchyards to substations around the site, where the electrical power is stepped down in voltage to 13.8 kV for distribution to the process and other support buildings. The dedicated generating capacity is 2,260 megawatts (MW). The current electrical consumption is about 20 to 40 MW.

4. Population. The population density in Pike County is 63 people per square mile.

5. Zoning. The site is a DOE site used for heavy industrial use.

6. Road Access. Site roads are already built. The site is 3.5 miles south of the intersection of the US Route 23 and Ohio SR 32 interchange. Both routes are four lanes with US Route 23 traversing north-south and Ohio SR 32 traversing east-west.

7. Seismic Stability. There have been no historical earthquakes within 25 miles of the site.

8. Water Availability. The maximum production associated with the well fields is 13 million gallons per day. With the termination of enrichment operations at the site, the current water usage and planned future usage is significantly less than the production capacity. There is also a backup system that can draw directly from the Scioto River in the event the wells are unable to produce sufficient water to meet the site demands.

- The PORTS site is a well characterized site with recent environmental impact assessments for the American Centrifuge Plant and the DUF₆ Conversion Facility. One of the 500-acre sites was previously considered by Dominion and Bechtel for a new nuclear reactor; the site was not selected; however, it met or exceeded all acceptance criteria.
- Railroad infrastructure exists with access to two rail carriers, CSX and Norfolk Southern rail lines.
- Ocean going ships can access Ohio Great Lakes ports. Ohio River barge access is available at Portsmouth.
- Approximately 75% of all commercial nuclear generation units in the US are within one day's travel to PORTS which would reduce the impacts of transporting spent and new fuel to and from the CFTC and existing reactors.
- The site has existing infrastructure including:
 - Facilities including office space, fire department, health services, and emergency response facilities.
 - Utilities including firewater, water treatment, sanitary waste treatment, electric, steam, stormwater drainage, and cooling towers.
 - Services including emergency preparedness, environmental and radiological monitoring, emergency medical, fire and hazmat responders, and security.
- As the DUF₆ Conversion Facility decreases the inventory of cylinders on the PORTS site, additional paved lay-down space will become available.

- The four county region of influence has a skilled nuclear workforce with both DOE and NRC regulatory experience.
- Training and education centers offer extensive capabilities – 6 public universities within 75 miles of the DOE reservation, two with nuclear engineering programs; 13 public community colleges within 75 miles of the DOE reservation; Battelle Memorial Institute located 60 miles north in Columbus, Ohio; National Composite Center located 75 miles northwest in Dayton, Ohio; Edison Welding Institute located 60 miles north in Columbus, Ohio; Cincinnati Machining Company located 75 miles west in Cincinnati; and the University of Cincinnati Center of Robotics located 75 miles west in Cincinnati.
- Community support is demonstrated by the letters received from key officials, groups and organizations for inclusion in the *Summary of the Community Involvement Activities* report. These letters demonstrate levels of support from the Governor of the State of Ohio, the State President of the AFL-CIO, deans of educational institutions, other elected officials, businesses, and economic leaders from the local communities within the region of influence surrounding the Piketon plant.

Regulations and Permits: To perform the review of regulations and permits applicable to the siting, construction, and operations of the proposed CFTC and ARR at PORTS, the review considered the options of either DOE or commercial ownership of the facilities and regulation by either DOE as owner or by NRC if DOE or commercially owned; three options were considered: DOE-owned and self-regulated, DOE-owned and NRC-regulated, and commercial facility with NRC license.

The analysis reviewed over 180 statutes and regulations. The statutes and regulations reviewed were related to NEPA; cultural resources; ecological resources; environmental protection including air quality, water quality, pollution prevention, and waste management; hazardous material transportation; chemical and industrial safety; and real property management. The regulations considered federal as well as Ohio requirements. Finally, the document identifies the consultations and permits that would be needed, the permits are identified by facility, refer to Table 7-6 CFTC Permits, Authorizations, Notifications or Consultations, and Table 7-7 ARR Permits, Authorizations, Notifications or Consultations. This review did not identify any regulatory prohibitions that might prevent locating the CFTC and ARR at PORTS.

Although there are no legislative or regulatory prohibitions that might prevent locating the CFTC and ARR facilities at PORTS, there are, however, several issues that have been identified that, if resolved, will simplify the siting, construction, and operation of the CFTC and ARR regardless of where they are sited; these concern chemical safety oversight, Price-Anderson coverage, TRU waste from non-defense facilities, and NESHAPS, refer to Table 8-1 Potential Legislative or Regulatory Prohibitions.

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PORTS has a continuing nuclear mission and has a history of providing overwhelming support to the government's successful nuclear energy initiatives. Future nuclear industrialization is a good fit with existing site uses and the workforce in the area. No site environmental characteristics or regulatory requirements would prevent siting the proposed GNEP facilities at PORTS.

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Acronyms

AEA	Atomic Energy Act of 1954, as amended
ARR	Advanced Recycling Reactor
CECP	Construction Emissions Control Plan
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFTC	Consolidated Fuel Treatment Center
CO	Carbon Monoxide
COG	Community Outreach Group
D&D	Decontamination and Decommissioning
DOE	Department of Energy
DOE-EM	DOE Environmental Management
DUF6	Depleted Uranium Hexafluoride
EIS	Environmental Impact Statement
EM	Environmental Management
EPA	Environmental Protection Agency
ePIFNI	Piketon Initiative for Nuclear Independence
F	Fahrenheit
FOA	Financial Assistance Funding Opportunity Announcement
ft ²	Square Feet
FY	Fiscal Year
GNEP	Global Nuclear Energy Partnership
HAPs	Hazardous Air Pollutants
HLW	High Level Radioactive Waste
kV	Kilovolts
LLMW	Mixed Hazardous and Radiological Waste
LLW	Low Level Radioactive Waste
M	Manual
MS4s	Storm Water Management Systems
MSDS	Material Safety Data Sheets
MTHM	Metric Tons of Heavy Metal
MW	Megawatts
NAAQS	National Ambient Air Quality Standards
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NFS	Nuclear Fuel Services
NMSS	Office of Nuclear Materials Safety and Safeguards
NOx	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
NUREG	NRC Technical Report Designation (Nuclear Regulatory Commission)
O	Order
ORC	Ohio Revised Code
OSHA	Occupational Safety and Health Administration

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P	Policy
P.L.	Public Law
Pb	Lead
PEIS	Programmatic Environmental Impact Statement
PM10	Particulate Material greater than 10 microns in diameter
PORTS	Portsmouth Reservation
PSD	Prevention of Significant Deterioration
psig	Pound per Square Inch Gage
RCRA	Resource Conservation and Recovery Act
ROG	Regional Outreach Group
SNF	Spent or Used Nuclear Fuel
SODI	Southern Ohio Diversification Initiative
SONIC	Southern Ohio Nuclear Integration Cooperative, LLC
SO _x	Sulfur Oxides
SPCC	Spill Prevention Control and Countermeasures
SWPPP	Storm Water Pollution Prevention Plan
TRU	Transuranic
TSCA	Toxic Substances Control Act
US	United States
USC	United States Code
VOCs	Volatile Organic Compounds
WIPP	Waste Isolation Pilot Plant

Citations for Laws and Regulations

This document uses accepted abbreviations for referencing the United States Code, the Code of Federal Regulations, and the Federal Register.

United States Code (USC)

The format for United States Code is xx USC yyyy, where xx represents the title and yyyy represents the section. For example, the Atomic Energy Act can be found at 42 USC 2011, et seq. The Latin phrase, et seq. (et sequentes) literally means "and the following." Et seq. can be interpreted to mean "and the subsequent sections."

The USC is available at: <http://www.gpoaccess.gov/uscode/browse.html>, <http://www.gpoaccess.gov/uscode/index.html>, or <http://www.law.cornell.edu/uscode/>

Code of Federal Regulations (CFR)

The format for the Code of Federal Regulation is xx CFR yyyy, where xx represents the title and yyyy represents the part. For example, Department of Energy (DOE) regulations on environmental protection can be found at 10 CFR Part 1021. A specific section of the regulation would be identified by use of the section symbol, §, so a reference to the level of National Environmental Protection Act review would cite 10 CFR §1021.400, Level of NEPA Review.

The CFR is available at: <http://www.gpoaccess.gov/cfr/index.html>

Federal Register (FR)

The format for the Federal Register is xx FR yyyy, where xx is the volume number and yyyy is the page number. For example, the Notice of Intent for the global Nuclear Energy Partnership is found at 72 FR 331.

The Federal Register is available at: <http://www.gpoaccess.gov/fr/index.html>

Ohio Laws and Regulations (ORC/OAC)

The format for the Ohio Revised Code is ORC-xxx-xxx and for the Ohio Administrative Code is OAC-xxxx-xxx.

Both the ORC and OAC are available at:
<http://codes.ohio.gov/>

1 Introduction

On behalf of the Southern Ohio Nuclear Integration Cooperative, LLC (SONIC), the Piketon Initiative for Nuclear Independence (ePIFNI) submits this report, the *Affected Environment and Regulatory and Environmental Permitting/Licensing Requirements*, and a second report, the *Summary of Community Involvement Activities*, to fulfill its requirements under DOE Financial Assistance Award Agreement DE-FG07-07ID14795 in which the Department of Energy (DOE) directed ePIFNI to conduct activities in the following areas:

- Identify the site for the Consolidated Fuel Treatment Center and for the Advanced Recycling Reactor,
- Identify local, regional, state and national regulatory and environmental permits required for this facility, including legislative or regulatory prohibitions that might prevent siting Global Nuclear Energy Partnership (GNEP) facilities at the Portsmouth Reservation, Piketon, Ohio, and
- Perform up to three informal community-involvement activities to inform state and local stakeholders of the purpose of the GNEP siting studies and obtain their opinions.

These two reports were prepared by ePIFNI and Southern Ohio Diversification Initiative (SODI), or SONIC, and teammates: AREVA, Washington Group, Battelle Memorial Institute, and Wastren Advantage, Inc. For clarification, SONIC was formed to pursue public and private investment in advanced nuclear technologies at the PORTS site. SONIC is a limited liability corporation formed by ePIFNI, a privately held, for-profit corporation and SODI, the officially designated Community Reuse Organization for the Portsmouth Reservation. The purpose and goals of SONIC align with the purpose and goals of the Global Nuclear Energy Partnership (GNEP).

2 Background

GNEP is a comprehensive strategy to encourage expansion of domestic and international nuclear energy production while reducing nuclear proliferation risks, and reducing the volume, thermal output, and radiotoxicity of used or spent nuclear fuel before disposal in a geologic repository. Used or spent nuclear fuel (SNF) is fuel withdrawn from a nuclear reactor following irradiation as a source of energy in a power reactor. In the United States (US), the GNEP proposal is to begin to recycle used or spent fuel, recover unused energy in used fuel, and destroy the long-lived radioactive components of that fuel. Toward this end, the Department of Energy (DOE) is investigating the options for deploying an integrated recycling capability. The current siting study is related to two facilities:¹

- The proposed **Consolidated Fuel Treatment Center (CFTC)** would support two of the three key components of a reactor spent nuclear fuel (SNF) recycling program:

1. It would separate light-water reactor SNF and fast-reactor SNF into their reusable and non-reusable constituents or waste components [without separating pure plutonium], and
2. Manufacture new nuclear fuel using reusable components that still have the potential for use in nuclear power generation and destroy transuranic (TRU) elements in the advanced recycling reactor after completion of transmutation research.

A nuclear fuel recycling center could be privately owned and operated, potentially with government-supplied incentives or other involvement yet to be determined.

- The **Advanced Recycling Reactor (ARR)**, a fast neutron spectrum reactor, would be capable of converting long-lived radioactive elements (e.g., plutonium and other TRU) into shorter-lived radioactive elements while producing electricity. The advanced recycling reactor could be privately owned and operated, potentially with government-supplied incentives or other involvement yet to be determined.

The US national laboratories would design and direct a third component, the **Advanced Fuel Cycle Facility**, a modern state-of-the-art laboratory designed to research SNF recycling processes and other aspects of advanced nuclear fuel cycles for the next 50 years. It would use modular, flexible construction techniques with near-term priority given to the fabrication and qualification of fuels for an advanced fast reactor. *This facility is not addressed in this document.*

In support of this strategy, the Department of Energy (DOE) is preparing a Programmatic Environmental Impact Statement (GNEP PEIS) that will assess alternative technologies and implementation approaches (e.g., demonstration or commercial scale facility) that are deemed reasonable.² To prepare the GNEP PEIS, DOE needed to include potential sites that would host the CFTC and ARR. On August 3, 2006, DOE issued a Financial Assistance Funding Opportunity Announcement (FOA) for public or commercial entities interested in hosting GNEP facilities to conduct detailed siting studies. On November 29, 2006, DOE announced that 11 commercial and public consortia had been selected to receive grants under this FOA. The grants were awarded on January 30, 2007. The purpose of these grants is to obtain site specific information related to siting the CFTC and ARR. In addition the grants were used to develop and implement a communications plant to provide stakeholder information and solicit input on the GNEP program. The information and evaluations will be used to support the preparation of the GNEP PEIS.

3 Purpose

This document provides a description of the two proposed GNEP sites on the PORTS Reservation, the affected environment, the regulatory environment, and the capabilities of the DOE Portsmouth Reservation (PORTS) at Piketon, Ohio, to host the GNEP facilities.

The information on this site will be used by DOE to evaluate and compare this site to other proposed sites in the GNEP PEIS.

4 Scope

This document describes^{3,4} the proposed GNEP sites at PORTS and the basis for proposing these two sites; the affected environment that could be impacted by the proposed facilities including water resources, aquatic and riparian ecological communities, critical and important terrestrial habitats, threatened and endangered species, regional demography including historical and cultural resources, minority, tribal or low income environmental justice concerns, geology and seismology, weather and climatology, and hydrology; site infrastructure that could be used by the new facilities including waste capabilities, access to and from the proposed facilities via roads, rail, and barge, and any limitations the specific location of the proposed facilities may have on facility size, scale and design of the proposed facilities; and identification of the local, regional, state and national regulatory and environmental permits required for this facility, including legislative or regulatory prohibitions that might prevent siting such a facility.⁵

This document identifies the requirements for construction, startup, operation, and decommissioning of the CFTC and ARR on two sites at PORTS. This document also provides the regulatory framework for licensing the CFTC and ARR under either DOE or US Nuclear Regulatory Commission (NRC) regulations. The basis for including NRC licensing requirements is from the Expression of Interest (EOI) that indicated that the facilities should be licensable by the Nuclear Regulatory Commission and the Notice of Intent that states both the CFTC and ARR could be commercial facilities that could be privately owned and operated.

This document is organized to address the key assumptions including facility general characteristics and facility ownership; the affected environment including the site description; and regulatory and environmental permit requirements including Federal statutes, Executive Orders, Federal regulations state regulations and licenses, permits, and consultations required to design, construct, startup, operate, and decommission.

5 Key Assumptions

The regulatory and permitting requirements are dependent upon the CFTC and ARR designs, upon the organization seeking to develop such a facility, and upon site specific requirements. Currently, specific information such as the specific technology, size of facility, and other parameters about the GNEP facilities has not be finalized. This section discusses key assumptions about the facilities and the site used as a basis for this document. Identification of the regulatory requirements for the CFTC and ARR is based on current law and regulations.

5.1 Facility General Characteristics

As stated previously, GNEP is a comprehensive strategy to increase U.S. global energy security, reduce risk of nuclear proliferation, encourage clean energy development worldwide and improve the environment. The FOA requested a siting study for the CFTC and the ARR. The purpose of this section of the document is to provide general information on these GNEP facilities in order to support development of the site reports.

As the program is still early in the development phase and specifics such as technologies have not been selected or size of facilities have not yet been determined, information detailed for the CFTC and ARR below is for general discussion purposes only. It is based on DOE's program statements and some general knowledge from worldwide operating experience based on available information for facilities using current available technology. **There is Limited Specific Facility Information Available.**

In general terms, GNEP recycling would work as follows. Spent fuel would be received from commercial nuclear reactors and would be processed in a CFTC to separate the potentially reusable constituents (uranium and TRU elements) from the non-reusable constituents (*e.g.*, fuel element structural materials and fission products). The reusable constituents would be used to make uranium fuel for light water reactors and transuranic (TRU) fuel for an ARR and, possibly, other reactor fuels (*e.g.*, uranium could be re-enriched and made into light-water reactor fuel). The TRU fuel would be consumed in an ARR, and the ARR would also produce electricity during these operations. The used or spent TRU fuel would then be separated and the remaining TRU used to make new TRU fuel to be further destroyed in the ARR while producing electricity. Non-reusable constituents would be converted to waste forms for eventual disposal in a geologic repository or for other long-term storage or disposal, as appropriate. This fuel cycle has the potential to reduce the volume, thermal output, and radiotoxicity of waste that would need to be placed in a geologic repository, thereby increasing the geologic repository's effective capacity and lessening the need for additional repository capacity.

This fuel cycle is shown pictorially:

Figure 5-1 GNEP Facilities and Material Flow⁶

5.1.1 Consolidated Fuel Treatment Center (CFTC)

The CFTC is an industrial facility that will treat and separate used fuel constituents into reusable and waste components. The CFTC will support two of the three key components of a used fuel recycling program:

1. The facility would separate light-water reactor spent nuclear fuel and fast reactor spent nuclear fuel into their reusable and non-reusable constituents.
2. After completion of transmutation fuel development at the Advanced Fuel Cycle Research Facility, the CFTC will fabricate such fuel for use in the destruction of transuranic elements in a fast reactor (the Advanced Recycling Reactor).

The CFTC could be privately owned and operated, potentially with government-supplied incentives or other involvement yet to be determined.

Taking into account the limitations cited above, the main functions, and therefore, sub-facilities and process steps for an CFTC could be envisioned to be:

- Fuel Receipt and Queuing – This building ensures safe receipt and handling of the used fuel.
- Shearing-Dissolution-Compaction – This building performs the front-end of the process by using dissolution liquors to access the nuclear material present in the used fuel rods. The structural elements of the used fuel such as end-fittings and cladding are rinsed, then compacted.
- Separation-Purification-Concentration – This building does the separation of the radionuclides to separate two streams that are destined to (1) recycling into a new fuel (with purification and concentration steps) and (2) conditioning into a stable waste form (after a concentration step).
- Conversion and Fuel Production – This area converts the liquid stream of elements which will be used to produce new fuel for the ARR in an oxide or metal form. From there, the fuel is manufactured in the same building.
- High Level Waste Production – This building is where the waste stream goes and conditions the waste into a suitable matrix for permanent disposal of the high level waste.
- High Level Waste Cooling – As this high level waste needs to decay heat for such time that it becomes suitable for acceptance to an optimal transportation path to a geological repository, it is held for a necessary period here.
- Balance of Plant Facilities

The above buildings would be placed in the most optimum and suitable configuration needed for the overall site.

DOE is currently evaluating alternative separations technologies and corresponding potential waste streams and alternative waste forms (*e.g.*, borosilicate glass, ceramic). In addition, DOE is also analyzing SNF throughputs and corresponding facility size ranging from approximately 100 MTHM annually (engineering/demo scale), up to 3,000 MTHM annually (commercial scale). At the low range of throughputs, the analyses would correspond to engineering-scale capacities. At the high range of throughput, DOE expects that the CFTC would have the capacity to recycle up to 2,000–3,000 MTHM annually, which would enable a CFTC to recycle commercial SNF inventories that can decrease the current inventory of SNF (*i.e.*, process annual commercial reactor SNF discharge plus work down existing inventory). Included in these evaluations will be studies related to queuing of spent fuel prior to recycling, as well as retention of waste generated from recycling, at a level related to the projected throughput for the facility.⁷

5.1.2 Advanced Recycling Reactor (ARR)

The ARR is a fast neutron spectrum reactor that will be capable of converting long-lived radioactive elements (*e.g.*, plutonium and other transuranics) into shorter-lived radioactive elements while producing electricity. The ARR could be privately owned and operated, potentially with government-supplied incentives or other involvement yet to be determined.

The DOE anticipates that the reactor used will be the Sodium-Cooled Fast Reactor (SFR) system that features a fast-spectrum, sodium-cooled reactor and a closed fuel cycle for efficient management of actinides and conversion of fertile uranium.

Taking into account the limitations cited earlier, the main components of the ARR are envisioned to be:

- Reactor Building --- contains the nuclear island and its associated auxiliary systems, along with the fuel component handling equipment, fuel decontamination facilities, and storage for new and used fuel. The reactor building will be designed to prevent the release of radioactivity and to provide radiological shielding.
- Steam Generator Building – contains steam generators
- Auxiliary Building – contains nuclear island component cooling systems and the reactor building HVAC system.
- Turbine Generator Building – contains turbines and generators to produce electricity. The turbine generator building is connected to the steam generator building by feed water and main steam lines.
- Switchyard & Transmission lines – contains components to transfer electricity to grid
- Auxiliary Building and balance of plant facilities

The ARR will be designed for management of high-level wastes and, in particular, management of plutonium and other actinides. Important safety features of the system include a long thermal response time, a large margin to coolant boiling, a primary system that operates near atmospheric pressure, and intermediate sodium system between the radioactive sodium in the primary system and the water and steam in the power plant.

DOE is currently evaluating alternative fuel types (e.g., oxide, metal) and power ratings (250—2,000 MW_{thermal} (80 to 600 MW_{electric})). DOE also will assess appropriate alternatives for spent fuel generated by the reactor prior to future recycling, at a level related to the projected size of the reactor.⁸

5.1.3 CFTC and ARR Block Flow Diagram

The block flow diagram below provides a simplified diagram of the potential material flows into and potential releases from the facilities. This diagram provides the basis for identifying potential regulatory and permit requirements for the facilities.

Figure 5-2 CFTC and ARR Diagram Showing Facility Layout, Inputs and Outputs

5.2 Facility Ownership and Regulatory Authority

At the current time, decisions on the ownership or regulatory authority for the CFTC or the ARR have not been made, however, facility ownership or operating organization can affect the regulatory requirements for both the CFTC and ARR. The facilities could be government or commercially owned and could be regulated by either DOE or the Nuclear Regulatory Commission (NRC). In answers to questions resulting from the EOI, DOE stated that the CFTC and ARR should be capable of being licensed by the NRC. The response states:

With a few exceptions, the Department regulates facilities operated by it or its contractors and is not subject to NRC licensing. Whether the CFTC or ABR [ARR] would be licensed by NRC would depend on the details of a particular proposal relating to whether it would be considered a facility operated by or on behalf of DOE. Since an objective of GNEP is to promote commercialization of advanced technologies, the EOI requested CFTC and ABR [ARR] proposals that would comply with all applicable NRC regulations in order to facilitate licensing of such facilities when they are commercially deployed.⁹

5.2.1 CFTC

The regulatory structure for the CFTC is dependent on implementation of the Atomic Energy Act of 1954 (AEA), as amended, and the Energy Reorganization Act of 1974, as

amended. The SNF separations facilities that were constructed and operated in the 1970's were under private sector control and subject to NRC licensing.

Because there has been no activity in commercial nuclear fuel separations in nearly 30 years, Congress may prescribe licensing and regulatory authority for future facilities in a different manner than prescribed by current federal law. If the CFTC is a DOE owned facility operated by or on behalf of DOE, it could be subject to DOE regulation and oversight; however, there is precedent where Congress enacted law to require NRC licensing if the new fuel is going into commercial reactors. The precedent for this is Public Law 105-261 where Congress assigned regulatory authority to the NRC for...

Any facility under a contract with and for the account of the Department of Energy that is utilized for the express purpose of fabricating mixed plutonium-uranium oxide nuclear reactor fuel for use in a commercial nuclear reactor licensed under such Act [Section 202 of the Energy Reorganization Act of 1974, as amended], other than any such facility that is utilized for research, development, demonstration, testing, or analysis purposes.¹⁰

Further, this law also stated that the mixed plutonium-uranium oxide fuel fabrication facility would be subject to the Occupational Safety and Health Act of 1970.

In another precedent, Congress enacted The Nuclear Waste Policy Act of 1982, as amended, to require the high level waste repository to be licensed by the NRC; however, the repository is still regulated by DOE for requirements that are not covered by NRC regulations, such as occupational safety and health requirements.

Currently, the NRC does not have regulatory authority for, and would not license, any DOE-owned separations facility used to process commercial SNF, the DOE-owned fuel fabrication facility for the ARR, or over the DOE vitrification and interim waste storage facilities for the actinide/high-level waste streams coming from the DOE-owned separation facility operated by or on behalf of DOE.¹¹ The NRC would likely, however, have regulatory authority over the fuel fabrication facility if mixed plutonium-uranium oxide fuel is used in existing commercial reactors.

If the CFTC is privately owned and operated, then NRC would license the facility.

Potential Regulatory Issue 1: It is not absolutely clear whether a DOE owned reprocessing facility operated by or on behalf of DOE would be regulated by NRC and OSHA, regulated by NRC for radiological safety and DOE for chemical and industrial safety regulations and orders, or regulated entirely under DOE regulations and orders.

Potential Regulatory Solution: Congress in its authorizing legislation could amend Section 202 of the Energy Reorganization Act to specifically identify licensing authority and chemical and industrial safety oversight.

Whether DOE- or commercially-owned and operated, for purposes of this siting analysis, it is assumed that either NRC regulations and/or DOE orders/oversight will apply.

5.2.2 ARR

The Clinch River Breeder Reactor was the last proposed demonstration reactor developed in this country; Congress authorized NRC to license this and all other DOE demonstration reactors. Section 202 of the Energy Reorganization Act of 1974 defines NRC regulatory authority over DOE activities; NRC¹² was given regulatory authority over the following DOE demonstration reactors:

- (1) Demonstration Liquid Metal Fast Breeder reactors when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.
- (2) Other demonstration nuclear reactors—except those in existence on the effective date of this chapter—when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

Therefore, the ARR, whether DOE- or commercially-owned and operated, would be subject to NRC regulation and oversight. Oversight of chemical and industrial safety could be under DOE or OSHA authority depending on ownership.

6 PORTS Site Description

The information in this section is provided to support the selection of the PORTS site in hosting one or more GNEP facilities as requested in the Financial Assistance Funding Opportunity Announcement (FOA). SONIC applied for and received an FOA grant to perform a detailed siting study of the capability of the DOE Portsmouth Reservation (PORTS) at Piketon, Ohio, to host the GNEP facilities. To be considered for a FOA, the proposed site or sites had to be

...located within the United States. An applicant proposing a non-DOE site must be the site owner or have a legally enforceable commitment from the site owner that GNEP facilities can be located on the site and operated for the next 50 years.

The proposed site must meet the minimum site criteria of:

1. Size. The area and linear dimensions of the site must accommodate one or both GNEP facilities. The proposed site must not be less than 300

contiguous acres for siting one facility and 500 contiguous acres for siting both facilities.

2. Hydrology. The site must be sufficient to allow siting of the anticipated facilities above the 100 year flood plain.
3. Electricity Capability. There must be an electrical transmission line able to provide 13kV available within 10 miles of the proposed site.
4. Population. The population density, including weighted transient population, averaged over any radial distance out to 20 miles (cumulative population at a distance divided by the area at that distance), does not exceed 500 persons per square mile.
5. Zoning. If zoning regulations apply to the proposed site, the site must be zoned for heavy industrial/industrial use. Alternatively, the applicant must demonstrate that the area could be zoned for heavy industrial/industrial use.
6. Road Access. The proposed site must be within 5 miles of a highway capable of supporting a load of 80,000 lbs GVW.
7. Seismic Stability. The proposed site must be free of risk from significant seismic events.
8. Water Availability. The proposed site must have access to reliable supplies of water.

It is important that applicants interested in hosting GNEP facilities be aware that operation of these facilities will require the storage of nuclear materials. In particular, the operation of the CFTC will require the hosting site to accept and store spent nuclear fuel as feed into the separations process. Accordingly, a site should have the potential to provide storage capability for the volume of material associated with commercial scale operations.

In addition, the Department believes it is important to have strong support within the community and state where the GNEP facilities will be located. Thus, preference may be given to sites where the applicant has demonstrated community and state support for the use of the site for GNEP facilities.¹³

The PORTS Reservation is a fully industrialized nuclear reservation with ongoing DOE missions and the American Centrifuge Plant and the DUF₆ Conversion Facility, industrial applications that will continue for some time. This section describes the existing conditions at or near the proposed GNEP sites in Piketon, Ohio. After an initial overview of the site location and activities that support a continued nuclear presence, the section presents information on surrounding land use; historic and cultural resources; visual and scenic resources; climatology, meteorology, and air quality; geology, minerals, and soils; water resources; ecological resources; socioeconomic conditions; environmental justice considerations; noise levels; transportation systems; public and occupational health conditions; and current waste generation and management practices.

The information on the facilities and utilities that could be used by the proposed GNEP facilities is taken primarily from the references identified below:

- SAIC, *Environmental Audit Supporting Transition of the Gaseous Diffusion Plant to the USEC*, June 1993.
- US DOE, Oak Ridge Operations, *DUF6 Site Characterization Data for Portsmouth, Ohio*, October 31, 2000, <http://www.oakridge.doe.gov/duf6disposition/podata.htm>.

The information on the PORTS Site and its affected environment is taken primarily from the references identified below:

- US NRC, NUREG-1834, *Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio*, April 2006.
- US DOE, DOE/EIS-0360, *Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at Portsmouth, Ohio, Site*, June 2004.
- Dominion Energy, Inc. and Bechtel Power Corporation, DE-FC07-02ID14313, *Study of Potential Sites for the Deployment of New Nuclear Plants in the United States*, prepared by Dominion Energy, Inc. and Bechtel Power Corporation, September 2002.

Information from other sources will be identified by endnote.

6.1 PORTS Location and Mission

The Portsmouth Reservation is an approximate 3,700 acre parcel of DOE-owned land in sparsely populated, rural Pike County in south central Ohio. The area was previously farmland and the watershed for several intermittent streams. Wayne National Forest borders the plant site on the east and southeast, and Brush Creek State Forest is located to the southwest, slightly more than 1 mile from the site boundaries.

The site is about 65 miles south of Columbus, Ohio, and 75 miles east of Cincinnati, Ohio, the two closest metropolitan areas. The towns of Portsmouth and Chillicothe, Ohio, are situated about 20 miles from the site. The nearest residential center is Piketon, which is about 5 miles north of the site. The county's largest community, Waverly, Ohio is about 10 miles north of the site. The terrain surrounding the site, except for the Scioto River floodplain, consists of marginal farmland and densely forested hills. The Scioto River floodplain is farmed extensively, particularly with grain crops. Refer to Figure 6-1 Regional Map with the Region of Influence.

Figure 6-2 Photograph of the PORTS Site and Surrounding Area, is provided to illustrate the site and adjacent areas. Approximately 190 buildings are situated on the site as are

several utility structures. The industrialized portion of the site encompasses approximately 1000 acres. A perimeter road surrounds a 1,200 acre centrally developed area. Most of the site improvements, associated with the Portsmouth Gaseous Diffusion Plant, are within a 500 acre fenced area inside the developed area. Within the fenced area are three large process buildings and auxiliary facilities. A second, large developed area covering about 300 acres contains the facilities built for the American Centrifuge Plant. A third, smaller developed area inside the 500 acre fenced portion of the site is the Depleted Uranium Hexafluoride Conversion Facility on a site of about 30 acres. Within the rest of the fenced area, the open areas are largely devoid of trees, with grass, paved roadways, and both concrete and gravel parking lots dominating the open space. There are also several operational and administrative facilities. The remaining area within the perimeter road has been cleared and is essentially level.

6.1.1 Past Mission - Portsmouth Gaseous Diffusion Plant

The Portsmouth DOE Reservation was established in 1952 and produced highly enriched uranium for military use until 1991. The DOE Portsmouth facility became a major producer of low enriched uranium for use in nuclear power generation facilities from the late 1960s until 2001. The enriched uranium was produced at the Portsmouth Gaseous Diffusion Plant, a facility previously operated first by DOE and then by USEC. Uranium enrichment operations at PORTS were discontinued in May 2001, and the plant was placed in cold shutdown in September 2005.¹⁴

Within the DOE reservation, the Portsmouth Gaseous Diffusion Plant occupies approximately 550 acres of the controlled access area surrounded by the Perimeter Road. This plant began operations in the mid-1950s using gaseous diffusion technology to produce enriched uranium for government and commercial use. In the late 1970s, DOE selected the plant as the site for a new enrichment facility using gas centrifuge technology. Construction of this facility, called the Gas Centrifuge Enrichment Plant, began in 1979, but was halted in 1985 because the projected demand for enriched uranium decreased. In 1991, DOE suspended the production of highly enriched uranium at the Portsmouth plant, but continued to produce low-enriched uranium for use by commercial nuclear power plants.

In accordance with the *Energy Policy Act of 1992*, the United States Enrichment Corporation, a subsidiary of USEC Inc., assumed full responsibility for uranium enrichment operations at the Portsmouth Gaseous Diffusion Plant on July 1, 1993. Since that time, DOE has leased the uranium enrichment production and operations facilities to the United States Enrichment Corporation, while retaining certain responsibilities for decontamination and decommissioning, waste management, depleted uranium hexafluoride (DUF₆) storage, and environmental remediation. In May 2001, the United States Enrichment Corporation ceased uranium enrichment operations at the Portsmouth plant and consolidated its enrichment operations at the Paducah Gaseous Diffusion Plant in Paducah, Kentucky.

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At the request of DOE, the gaseous diffusion plant was placed in cold shutdown. Currently, in accordance with a U.S. Nuclear Regulatory Commission (NRC) Certificate of Compliance, the United States Enrichment Corporation maintains the gaseous diffusion plant in cold shutdown, performs uranium deposit removal activities in the cascade facilities, and removes technetium-99 from potentially contaminated uranium feed transferred to the United States Enrichment Corporation by DOE prior to privatization from fuel reprocessing plants.

The Portsmouth site is not listed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List. Investigation and cleanup of hazardous substances (as defined in CERCLA) and hazardous wastes (as defined in the Resource Conservation and Recovery Act (RCRA)) that have been released to air, surface water, groundwater, soils, and solid waste management units as a result of past operational activities at the Portsmouth site are being conducted under the provisions of the following administrative edicts, which have been issued pursuant to RCRA, CERCLA, and/or Ohio state law:

Figure 6-1 Regional Map with the Region of Influence



Figure 6-2 Photograph of the PORTS Site and Surrounding Area

- State of Ohio v. U.S. Department of Energy, Divested Atomic Corporation, et al., Consent Decree. Civil Action C2-89-732. August 31, 1989 (referred to as the 1989 Ohio Consent Decree). The 1989 Ohio Consent Decree addresses certain hazardous waste compliance issues at the Portsmouth site and requires the performance of corrective actions in addition to other requirements.
- In the Matter of United States Department of Energy: Portsmouth Gaseous Diffusion Plant, Administrative Consent Order. U.S. Environmental Protection

Agency (EPA) Administrative Docket No. OH7 890 008 983. August 12, 1997 (agreement between DOE, U.S. EPA, and Ohio EPA) (referred to as the 1997 Three-Party Administrative Consent Order). The 1997 Three-Party Administrative Consent Order replaced a prior U.S. EPA Administrative Consent Order, which was issued during 1989 and amended in 1994, and defines oversight roles at the Portsmouth site for the Ohio EPA and U.S. EPA with respect to corrective action/response action activities. It also defines certain cleanup performance obligations for DOE.

- In the Matter of United States Department of Energy and Bechtel Jacobs Company LLC, Director's Final Findings and Orders. March 17, 1999 (referred to as the 1999 Ohio Integration Order). The 1999 Ohio Integration Order integrates the closure requirements for specified units at the Portsmouth site as established under the 1989 Ohio Consent Decree, the Ohio Administrative Code, and the 1997 Three-Party Administrative Consent Order. The purpose of this integration is to avoid duplication of effort, and efficiently perform site-wide groundwater monitoring and surveillance and maintenance activities at the Portsmouth site.

6.1.2 Current Missions

With the ongoing construction of the USEC American Centrifuge Plant and the UDS Uranium Conversion Facility, the DOE Portsmouth facility at Piketon will remain a key component of the nuclear fuel cycle for years to come. In addition to these two current missions, there are two other site uses that should be discussed, the DUF6 Cylinder Storage Yard and the Ohio National Guard use of existing facilities.

6.1.2.1 American Centrifuge Plant

The current missions for the site include the planned American Centrifuge Plant that will be situated on approximately 200 acres of the southwest quadrant of the controlled access area inside the Perimeter Road. In addition to this space, two UF6 cylinder storage yards, occupying a total of 27 acres, are located in the northeast part of the DOE reservation just north of the Perimeter Road. The proposed American Centrifuge Plant would consist of refurbished existing buildings and land formerly used for the Gas Centrifuge Enrichment Plant, as well as newly constructed facilities in that same area. This is the same location as the Lead Cascade Demonstration Facility, a test and demonstration facility designed to provide information on the reliability, performance, and cost of the gas centrifuge technology that will be used in the American Centrifuge Plant. The Lead Cascade Demonstration Facility will begin operation in late 2007.

6.1.2.2 Depleted Uranium Hexafluoride Conversion Plant

A smaller developed area inside the 500 acre fenced portion of the site is the Depleted Uranium Hexafluoride Conversion Facility on a site of about 30 acres located in the west-

central portion of the site. The location previously housed three structures for storage of lithium hydroxide monohydrate. This facility will convert depleted uranium hexafluoride, a product formed during the enrichment of uranium for nuclear applications by means of gaseous diffusion, to an oxide form for safer long-term storage or disposal, and the hydrogen fluoride will be extracted and sold commercially. The DUF₆ has been in storage at Portsmouth and East Tennessee Technology Park in Oak Ridge, Tennessee.

6.1.2.3 Cylinder Yard

The Portsmouth site also has a total of 16,109 DOE-managed cylinders containing DUF₆ from Portsmouth operations and another 6000 cylinders from East Tennessee Technology Park, Oak Ridge, Tennessee, operations that are stored in two storage yards that have concrete bases, concrete saddles for storing the cylinders with sufficient room between cylinders and cylinder rows to permit adequate visual inspection of cylinders.

6.1.2.4 Ohio National Guard

In addition to the DOE lease to the United States Enrichment Corporation, DOE leases a portion of the site to the Ohio National Guard. The Ohio National Guard uses the facility for classroom training/meeting activities and does not store weapons onsite. There are no military installations located near the DOE reservation at Piketon.

6.2 *Proposed PORTS Sites for GNEP Facilities*

The Southern Ohio Diversification Initiative (SODI) was established to develop uses for the underutilized lands and facilities at the DOE Portsmouth Reservation and to enhance economic growth in support of ongoing and future missions of the DOE site. As the DOE designated Community Reuse Organization for the Portsmouth Reservation, SODI is authorized to develop and lease the Portsmouth DOE reservation.

The Portsmouth DOE Reservation provides an ideal location for supporting GNEP activities. Approximately 75% of all commercial nuclear generation units in the United States are within one day's travel to PORTS. Co-located on the PORTS site are enrichment facilities that can be used to recycle the uranium waste stream from the CFTC. Refer to Figure 6-3 Location of Nuclear Generating Units in US.

Within the region is a human resource pool of highly qualified workers to support specialized nuclear projects. The resources include the current PORTS workforce, members of the local communities with experience working in the nuclear industry, personnel with experience in both DOE and NRC regulated environments, and a workforce of more than 75,000 construction-related workers within the region of influence of the DOE reservation.

Figure 6-3 Location of Nuclear Generating Units in US

For over half of a century, the Piketon community and the surrounding counties have provided overwhelming support to the government's successful nuclear energy initiatives including construction and operation of the Portsmouth Gaseous Diffusion Plant, construction and start-up of the DOE Gaseous Centrifuge Enrichment Plant, Environmental Restoration, the DUF6 Processing Facility, and the United States Enrichment Corporation (USEC) Advanced Centrifuge Project. The Piketon plant has a lengthy history of safe nuclear facility operations, and already has proven its ability to meet environmental and regulatory standards for other facilities.

The creation of the SONIC development group provides a focal point for bringing many of the technical resources available in Ohio together to support the GNEP initiative. Ohio colleges and universities can provide a skilled workforce for future GNEP facilities. Annually, Ohio's public colleges and universities enroll approximately 424,000 students and independent colleges and universities enroll over 109,000 additional students.¹⁵ In terms of the immediate site, the following institutions support the development of these technical capabilities, but are not limited to:

- 6 public universities within 75 miles of PORTS,
- 13 public community colleges within 75 miles of PORTS,
- Battelle Memorial Institute located 60 miles north in Columbus, Ohio,
- National Composite Center located 75 miles northwest in Dayton, Ohio,
- Edison Welding Institute located 60 miles north in Columbus, Ohio,
- Cincinnati Machining Company located 75 miles west in Cincinnati, and
- University of Cincinnati Center of Robotics located 75 miles west in Cincinnati.

PORTS has more than a half-century of nuclear operations by a highly trained workforce whose skills continually advance through various training programs of local labor unions, universities and technical institutes throughout the region and the state.

6.2.1 Proposed GNEP Sites

As previously stated, SODI was established to develop uses for the underutilized lands and facilities at the DOE Portsmouth Reservation and to enhance economic growth in support of ongoing and future missions of the DOE site. As the DOE designated Community Reuse Organization for the Portsmouth Reservation, SODI is authorized to develop and lease the Portsmouth DOE reservation. SONIC was formed by the incorporation of: SODI and ePIFNI, a privately-held, for profit entity. This section focuses on the land available on the PORTS site for industrialization.

As has been previously stated, PORTS has a continuing nuclear mission and has a history of providing overwhelming support to the government's successful nuclear energy initiatives. Future nuclear industrialization is a good fit with existing site uses and the workforce in the area.

The area and linear dimensions of the PORTS site are sufficient to accommodate both of the proposed GNEP facilities in a number of secure, flexible configurations, each exceeding 500 contiguous acres. The two sites on the PORTS site proposed for the GNEP Detailed Siting Study include one site inside the perimeter road and another site on the northeast corner of the reservation. Both areas are roughly 500 acres and are highlighted in the following diagram. Refer to Figure 6-4, Proposed and Alternative GNEP Facility Locations, for the location of the two proposed sites on a map. These sites are also highlighted on the site photograph, refer to Both sites have been well characterized. In addition, the PORTS site has over 3,700 acres of land that contains existing nuclear facilities with more than 2,000 acres of vacant land to support future construction and new missions and their facilities. If additional land is needed, refer again to the shaded area in Figure 6-4, Proposed and Alternative GNEP Facility Locations, can be made available.

With numerous siting studies performed at the PORTS site since the original construction of the Gaseous Diffusion Plant in 1952, PORTS is very well characterized in terms of the specific siting requirements associated with the proposed nuclear facilities. Based on the information provided on the site infrastructure and the affected environment in the following sections, PORTS is well suited to hosting the GNEP facilities.

6.2.2 Community Support

The PORTS site has strong support within the four country region of influence and within the state where the proposed GNEP facilities could be located. For over half a century, the PORTS region of influence has provided overwhelming support to the government's successful nuclear energy initiatives. During the time in which this detailed siting study was developed, SONIC has worked with various segments of the community to enhance the support for the proposed siting of the GNEP facilities at PORTS.

Before receiving the grant to perform the siting study, a tour of French facilities similar to those proposed as part of the GNEP initiative was made by various community leaders. The tour provided community leaders the opportunity to understand the French facility safety and regulatory processes as well as to talk with members of the surrounding communities to assess their comfort with an CFTC as a member of their community.

Once the grant was awarded, community support focused upon stakeholder engagement. It was directed towards first communicating, educating, and then involving the public on the technical and regulatory aspects of the GNEP initiative, and then informing them of the process of submitting stakeholder input to the DOE by the required date of June 4,

2007. This was important to assure that stakeholders were afforded opportunities to make informed comments and responses to the Notice of Intent and request for comments on the scope of the DOE-PEIS.

This stakeholder engagement strategy began with local Pike County residents, businesses, organizations, elected officials, and agencies. Then the stakeholder engagement strategy extended to the regional counties of Scioto, Jackson, and Ross. Additionally, the total effort ensured involvement of stakeholders throughout the State of Ohio who may have opinions, comments, or interests in the process of the study or potential siting of GNEP facilities at the Piketon location.

Community outreach groups were formed in each of the counties surrounding the PORTS site. A pilot organization, a Community Outreach Group (COG), was initially formed to address the Pike County stakeholder engagement requirements for immediate residents and organizational entities. Additional counterpart groups were established to function within the Counties of Scioto, Jackson, and Ross. A Regional Outreach Group (ROG) was formed from the chairpersons of each of the respective county COGs in order to provide consistent communications and opportunities for region wide support.

The amendment to the FOA provided an opportunity to provide three informal community involvement activities as part of the GNEP Financial Assistance award. Based upon the intent of the amendment “to inform the state and local stakeholders of the purpose of the GNEP siting studies and obtain their opinions,” SONIC hosted three informal public meetings for soliciting opinions regarding the GNEP siting study at PORTS. These informal public meetings were separately held on March 20, 2007, in Piketon, Ohio; April 9, 2007, in Portsmouth, Ohio; and April 10, 2007, in Chillicothe, Ohio. The focus of discussion included:

1. Providing information and answering questions regarding the Global Nuclear Energy Partnership (GNEP) initiative, and SONIC’s role in performing the study,
2. Providing information on the technologies, their safety, integration in communities where similar facilities are currently sited, and
3. Identifying to the public the process for public comment into the Programmatic Environmental Impact Statement (PEIS) to the DOE.

Preliminary responses of community support received by the SONIC organization by the date of this report submittal, are further defined in Appendix A and the letters are included in Appendix B of the SONIC report, *Summary of Community Involvement Activities Report, DE-FG07*, Award Number 07ID114795, that is also supplied as input to the PEIS.

6.2.3 PORTS Site Decontamination and Decommissioning

The PORTS site is currently an DOE Environmental Management (EM) site and is currently undergoing environmental remediation efforts; several inactive facilities have been decommissioned. The DOE initiated the current remediation program in the late 1980s.

The Portsmouth DOE Reservation was established in 1952 and produced highly enriched uranium for military use until 1991 and for use in nuclear power generation facilities from the late 1960s until 2001. Uranium enrichment operations at the Portsmouth Gaseous Diffusion Plant were discontinued in May 2001, and the plant was placed in cold shutdown in September 2005. The Portsmouth Gaseous Diffusion Plant has been declared or forecast to be excess to current and future DOE needs and is in transition between operations and disposition. DOE is currently planning for the decontamination and decommissioning (D&D) of the Portsmouth Gaseous Diffusion Plant and supporting facilities. D&D means that excess facilities that are radiologically and chemically hazardous will be placed in a safe and stable condition for interim storage prior to decommissioning and dismantlement. This ensures that risks to workers, the public, and the environment are reduced and the expense of long-term surveillance and maintenance will be minimized.

Based on discussions with site DOE-EM personnel, the D&D of the Portsmouth Gaseous Diffusion Plant and supporting facilities is scheduled to begin in late 2007 or early 2008. DOE is currently developing the procurement for this D&D work and hopes to have a new contract (contractor) selected to begin the more aggressive D&D program in Fiscal Year (FY) 2008. Budget approval, a critical project management decision, and award of the new contract are needed to go forward with D&D. Once approved, DOE will enter the acquisition phase to obtain the new contractor to complete CD-2 and begin project execution. To support the D&D planning process, DOE will prepare a Site Utilization and Management Plan. Approval of D&D efforts could include the design, construction, and operations of an on-site radioactive waste disposal cell.

This more aggressive program is demonstrated by the proposed DOE budget; approximately \$226 million is being sought by DOE-EM in FY08 for cleanup activities at Portsmouth including funding to award “a new contract to conduct decontamination and decommissioning activities for the gaseous diffusion plant.”¹⁶ D&D is estimated to total \$5.2 billion over the lifecycle of the project.

As site D&D activities occur, more of the site will be available for future development. As previously stated, SODI, was established to develop uses for the underutilized lands and facilities at the DOE Portsmouth Reservation and to enhance economic growth in support of ongoing and future missions of the DOE site. As the DOE designated Community Reuse Organization for the Portsmouth Reservation, SODI is authorized to develop and lease the Portsmouth DOE reservation.

6.2.4 Site Infrastructure

The Portsmouth Gaseous Diffusion was constructed in the mid-1950s with the inclusion of adequate site utilities, with the exception of imported electrical power and telecommunications, to function as a stand-alone operation. The PORTS site has an on-site steam plant, water treatment plant, wastewater treatment plant, and storm water management system. These systems have been in operation with nominal preventive maintenance and only upgraded as required to remain functional. This section provides information¹⁷ on the facilities and utilities that are part of the site infrastructure that could be used by the proposed GNEP facilities. In the late 1970s, the Gas Centrifuge Enrichment Plant was constructed adjacent to the diffusion plant. Existing utilities were extended to the Gas Centrifuge Enrichment Plant site and a recirculating heating and cooling water system was placed in service site-wide as applicable.

Figure 6-4 Proposed and Alternative GNEP Facility Locations

Figure 6-5 Proposed GNEP Sites on PORTS Site Photograph

6.2.4.1 Facilities

6.2.4.1.1 Office Buildings

Of the 150 acres of facilities (6,000,000 ft² of usable space) under roof, there are two administrative buildings on the Portsmouth Reservation, the X-100 and the X-1000 Buildings, which provide over 200,000 ft² of office space.

The X-100 building is an approximately 135,000 ft² office building; it currently houses several USEC personnel, but has available space for additional employees. It was constructed in the 1950's and requires maintenance to keep environmental control systems in operating condition.

Figure 6-6 X-1000 Administration Building

The X-1000 building is over 75,000 ft² and was constructed in the 1980's. It currently holds DOE and subcontractor personnel and was recently renovated, a nearly \$5 million renovation, which included new carpet, office furniture, HVAC system upgrade, and changes to the telecommunication infrastructure.

6.2.4.1.2 Fire Department

The Fire Station, Building X-1007, was built in 1981 and is constructed of concrete block and brick. The facility houses the fire department mobile emergency equipment, alarm room, first aid room, kitchen area, equipment storage, and fire station offices in a 13,500 ft² facility. The mobile emergency equipment includes pumpers, emergency trucks, and ambulances.

Figure 6-7 X-1007 Fire Station

It has served as the site Fire Station since 1984.

The facility is staffed around the clock with emergency medical technicians (EMTs) and trained firemen. All EMTs and firemen are trained in HAZMAT response and do regular drills at the site.

The site has an extensive agreement for mutual aid with several surrounding communities including Pike and Scioto Counties. All mutual aid support responders are also HAZMAT Fire Responder trained and participate with site personnel in regular drills.

6.2.4.1.3 Health Services Building

The X-101 Health Services Building, built in 1954, is a single story building with an area of 10,300 ft². The building is currently used as the site hospital and has five treatment rooms, four doctor's offices with examining rooms, a laboratory, an X-ray room, a ward, an emergency room, a decontamination area, a lobby waiting room, an office area, medical records storage, a physical therapy room, an audio booth with audiometer, and vision and pulmonary function test equipment.

Figure 6-8 X-101 Health Services Building

The facility is currently staffed with a full time doctor, two nurses, and several administrative staff to support the health services. Although facilities are in place for drug and alcohol testing, at present the service is provided by an off-site vendor.

6.2.4.1.4 Emergency Operations Center

The X-1020 Emergency Operations Center is a 7,180 ft² building built in the early 1980s. It now provides offices for emergency management personnel and serves as the main communications center during any plant emergency. It is manned 24 hours per day and also acts as a backup for the site security facility.

Figure 6-9 X-1020 Emergency Operations Center

The building is fully equipped to handle a major plant emergency. It contains banks of computers and telephones to track and respond to such an emergency. About 10 people routinely work in the building, but during an emergency or drill the facility can hold 60 or more people.

Utilities in the building include electricity (with an uninterruptible power supply and emergency generator), telephones, potable water (supplied to kitchen, showers, and restrooms), sanitary sewer connections, heat from the recirculating heating water system, central air conditioning, and a sprinkler type fire protection system.

6.2.4.2 Utilities

6.2.4.2.1 Sanitary Water and Fire Water

The PORTS has access to large, reliable supplies of water. The DOE Reservation is the largest industrial user of water in the vicinity and obtains its water supply from an on-site X-611 Water Treatment Facility that draws water from three well fields located along the Scioto River. The well fields draw groundwater from the Scioto River buried aquifer and are located in the Scioto River alluvium with the Scioto River floodplain. Recharge of

Figure 6-10 Well Fields at PORTS

the aquifer occurs from river and stream flow as well as precipitation, the annual average rainfall is 40.7 inches. The maximum potential production associated with the well fields is 13 million gallons per day. The current production is approximately 5 million gallons per day. There is also a backup system that can draw directly from the Scioto River in the event the wells are unable to produce sufficient water to meet the site demands.

The X-611 Water Treatment Facility was originally constructed with the diffusion plant. The X-611 facility has been upgraded progressively over time to remain in compliance with State of Ohio drinking water standards. The overall distribution system consists of underground steel pipelines with an approximate age of 45 years within the site. Flow rate is 250 gallons per minute. The system is looped throughout the site resulting in good reliability.

Figure 6-11 X-611 Water Treatment Facility

6.2.4.2.2 Recirculating Heating and Cooling Water

With the shutdown of the Gas Centrifuge Enrichment Plant, the recirculating cooling water provided by the X-630 Cooling Tower pump house will no longer be available. The steel underground piping distribution system was installed in the late 1970s and early 1980s. Recirculating heating water is process water heated by the diffusion plant process, and the distribution system consists of underground steel piping. If available, the service can provide 6050 gallons per minute of recirculating cooling water.

The cooling towers were upgraded in the mid-1990's. They can be restarted and used to support GNEP facilities but it is not clear what the new facility needs may be, so it is possible that some additional modifications or upgrades to the cooling towers may be required. Once DOE determines the specific technology to be deployed for the GNEP facilities, further evaluations of the cooling towers would be necessary.

6.2.4.2.3 Electricity

There is substantial dedicated electricity generation and transmission capacity available to the PORTS site. Additionally, the site's switching arrangement provides a highly reliable source of power for the proposed GNEP facilities.

The PORTS site is supplied electricity by the Ohio Valley Electric Corporation. Ohio Valley Electric Corporation operates two coal-fired power plants located on the Ohio River, Kyger Creek and Clifty Creek, which were built for and dedicated to serving the PORTS site. Their combined generating capacity is comparable to the PORTS design load of 2,260 megawatts (MW). The current electrical consumption is about 20 to 40 MW.

Electrical power is supplied from Ohio Valley Electric Corporation's external 345 kilovolts (kV) power grid at 345 kV through four switchyards to substations around the

site, where the electrical power is stepped down in voltage to 13.8 kV for distribution to the process and other support buildings. The distribution voltages are further stepped-down as necessary, depending on the facility requirements. The switching arrangement provides a highly reliable source of power for the proposed GNEP facilities.

6.2.4.2.4 Steam

With the shutdown of the Gas Centrifuge Enrichment Plant, the X-600 Steam Plant at PORTS may be dedicated to providing existing facilities with heat depending on the various shutdown scenarios. The X-600 Steam Plant at PORTS is a coal fired steam plant constructed in the mid 1950's to supply steam to the diffusion plant. The above ground steel piping distribution system ends at the X-330 Building. If still operating, steam can be available at 4600 pounds per hour at 125 psig from the X-600 Steam Plant via overhead steel lines currently located adjacent to the X-330 Building.

6.2.4.2.5 Sewage

Sewage treatment at the PORTS site is provided by the X-6619 Sewage Treatment Facility. This plant was constructed in the late 1970s. The system is activated sludge using plug flow processes, aerobic digestion, secondary clarification, and granular-media filtration for effluent polishing. Post-chlorination is used to produce a bacteriologically safe effluent, and the final product is dechlorinated with sulfur dioxide before discharge to the Scioto River at National Pollutant Discharge Elimination System Permit Outfall 003. Sewage from the proposed site can report to the X-6619 facility via gravity pipelines within and adjacent to the site. The X-6619 Sewage Treatment Plant has a design capacity of 700,000 gal/day and currently has 400,000 gal/day excess capacity available. The system is highly reliable.

6.2.4.2.6 Storm Water Drainage System

The proposed site has a developed and functioning storm water system consisting of open ditch and some very limited storm drains adjacent to the existing buildings that discharge to open ditches.

6.3 Information on the Affected Environment

This section describes the environment affected by the two proposed GNEP facilities, the CFTC and ARR, at the PORTS site and focuses on baseline conditions, *i.e.*, the status quo.

6.3.1 Land Use

The DOE reservation is located in Scioto Township of Pike County in south central Ohio. The region is characterized by steep to gently rolling hills in the general range of 427 to 820 feet above the Scioto River valley. Pike County is one of the State's lesser populated

counties, with a population density of 63 people per square mile. Towns in the vicinity of the reservation include Piketon (4 miles north), Waverly (8 miles north), Jasper (1.2 miles northwest), and Wakefield (8 miles south). Brush Creek State Forest (5 miles southwest) and Lake White State Park (6 miles north) are two public recreational areas located in the vicinity of the reservation.

The general land use adjacent to the DOE reservation includes residential homes, private and commercial farms, light industry, and transportation corridors (rail and highway). Land within 5 miles of the reservation is used primarily for farms, pastures, forests, and rural residences. Dominant land use within a 5-mile radius includes about 25,430 acres of farmland (including cropland, wooded lot, and pasture) and 24,400 acres of forest (including commercial woodlands and recreational forest). There are no State or national parks, conservation areas, or designated wild and scenic rivers within the immediate vicinity of the reservation.

Farmland that qualifies for protection under the *Farmland Protection and Policy Act of 1981* (prime farmland) is located in Pike County, primarily along the floodplain of the Scioto River. Marginal quality farmland is located within and adjacent to the DOE reservation, and does not qualify as prime farmland under the *Farmland Protection and Policy Act of 1981*. The Soil Survey for Pike County, Ohio indicates that the soil within and adjacent to the reservation is of low fertility and does not qualify as prime farmland.

6.3.2 Historic and Cultural Resources

Cultural resources include any prehistoric or historic district, site, building, structure, or object resulting from, or modified by, human activity. Under Federal regulation, cultural resources designated as *historic properties* must be considered in assessing impacts of proposed Federal actions. *Historic properties* are cultural resources listed in, or eligible for listing in, the National Register of Historic Places. To comply with Federal historic preservation laws and regulations as well as mandates of the *National Environmental Policy Act*, a Federal agency is required to identify historic properties in the area potentially affected by its actions and to consider potential effects on those properties and to consult with Indian tribes to identify concerns about historic properties on or off Tribal lands, present views about an undertaking's effects on such properties, and participate in the resolution of adverse effects.

For purposes of this siting study, included are the impacts on historic and cultural resources within the property boundary of the DOE reservation and adjacent area. The impacts were identified by NRC and DOE when they reviewed existing environmental documentation, including documents prepared under the *National Environmental Policy Act*, archaeological and architectural studies, the National Register of Historic Places, the Ohio Archaeological Inventory, and the Ohio Historic Inventory. Consultations were held with the State Historic Preservation Officer and with Indian tribes with possible ties to the vicinity.

6.3.2.1 Historical Setting

Southern Ohio, where the DOE reservation is located, contains evidence of human presence dating back more than 10,000 years. Archaeologically, the area is best known for the Adena and Hopewell Indian mounds (elaborate geometric earthworks, enclosures, and mounds) that were constructed during the Woodland Period (900 B.C. to A.D. 900). During the early historic period (A.D. 1500), the Shawnee Indians had villages within the Scioto Valley, in the general area of Portsmouth. There is evidence of European presence in the region around A.D. 1550. European settlement in the region began in the late 1700s, with the first permanent Euro-American settlers arriving in Pike County in 1796. The early development and economy in the region was almost entirely based on agriculture. The populations in the Portsmouth region grew slowly, with the growth of the transportation routes in the Scioto Valley as the primary impetus. During the 19th and early 20th centuries, several canals, roads, and, finally, railroads were constructed in the Scioto Valley region, and rural development of the area continued.

Large-scale industrial development began in 1952, when the Atomic Energy Commission, the present day DOE and NRC, selected a 5.8-square mile tract of land in the Ohio Valley along the Scioto River in Pike County as the location for the Portsmouth Gaseous Diffusion Plant, to complement gaseous diffusion facilities at Oak Ridge, Tennessee, and Paducah, Kentucky. Construction of the Portsmouth Gaseous Diffusion Plant began in 1952 and was completed in 1956. During construction, more than 1,200 acres were cleared and more than 4.5 million cubic yards of earth were removed. The majority of the clearing, grading, and soil removal occurred within the central area of the Portsmouth Gaseous Diffusion Plant within the Perimeter Road. Since the initial development of the Portsmouth Gaseous Diffusion Plant in the 1950s, other construction activities have been initiated on the reservation to include additional administrative offices, warehouses, and the development of the Gas Centrifuge Enrichment Process facilities from 1979 to 1985 in the southwest portion of the reservation.

6.3.2.2 Survey Methods and Results

To identify the cultural resources present in and around the PORTS site, NRC and DOE reviewed existing documentation including documents prepared under the National Environmental Policy Act, archaeological and architectural studies, the National Register of Historic Places, the Ohio Archaeological Inventory, and the Ohio Historic Inventory. Consultations with the Ohio Historic Preservation Officer and with Indian tribes with possible ties to PORTS were made.

An initial survey of the DOE reservation was completed in July and August of 1952, before construction of the facility began. The survey reportedly found no evidence of archaeological materials within the reservation boundary; the survey was under the

supervision of Dr. Raymond S. Baby, Curator of Archaeology, Ohio State Historical Society.

An intensive archaeological reconnaissance was performed in September 1996, April 1997, and May 1997 on the entire DOE reservation, with the exception of areas occupied by plant-related buildings or structures, sanitary landfills, or lagoons. The surveys resulted in the identification of 36 previously undocumented archaeological sites within the boundary of the DOE reservation. These were recorded in the Ohio Archaeological Inventory as sites 33 Pk 184 through 33 Pk 219. The 36 sites included 13 remnants of historic farmsteads, seven historic scatters or open refuse dumps, two historic isolated finds, four DOE reservations plant related structural remnants, one historic cemetery, five prehistoric isolated finds, two prehistoric lithic scatters, and two sites that contained both prehistoric and historic temporal components, an historic cemetery with a prehistoric isolated find, and a prehistoric lithic scatter on a historic farmstead.

All of these sites are located outside the Perimeter Road so would not impact the proposed GNEP site within the Perimeter Road. Three archeological sites were found near the proposed GNEP site outside the Perimeter Road, they are situated to the northeast edge of the site. The closest site is Holt Cemetery, which is 600 feet away from the eastern boundary of this site. No national landmarks are reported near the site.

When NRC assessed the impacts of the American Centrifuge Plant, a literature review at the Ohio Historical Society and the Genealogy Section of the Pike County Public Library was conducted prior to the archaeological survey. In addition, aerial photographs from 1939 and 1951 flights predating construction of the Portsmouth Gaseous Diffusion Plant were reviewed. The review focused on an area centered on the reservation, extending out 4 miles from the center of the reservation. The information found included:

- a. The search found no sites within reservation boundaries recorded in the State archaeological inventory, although 71 prehistoric sites were recorded within the study area (an area extending 4 miles from the center of the reservation).
- b. Likewise, no buildings within the reservation were listed on the Ohio Historic Inventory. Three buildings were listed within the study area. Of the three, only the Bailey Chapel is directly adjacent to the reservation boundary. The other two, former residences, are located in Seal township north of the reservation.
- c. Three properties within 4 miles of the reservation are listed on the National Register of Historic Places: the Piketon Mounds 2 miles north of the boundary, the Scioto Township Works are located to the southwest of the DOE reservation, approximately 820 feet from the boundary and approximately 0.6 mile from the Perimeter Road, and the Van Meter Stone House and Outbuildings, located at a road intersection approximately 2 miles north of the boundary.

6.3.2.3 Indian Artifacts

At present, there are no Native American reservations or federally recognized tribes in Ohio. Native American religious and cultural sites (including burials) are protected under the American Indian Religious Freedom Act. Burial sites of the Adena and Hopewell cultures exist in the Scioto and Ohio River valleys. To date, no burial sites have been encountered within the Portsmouth reservation. No religious or sacred sites in current or recent use by Native American groups have been identified.¹⁸

The Adena culture¹⁹ was first identified about 300 years B.C. and continued through about A.D. 200 in some areas. Most of what is known about the Adena derives from their mortuary practices, which took two forms. While most were cremated, specific individuals were selected to be encased in log tombs that were subsequently covered by mounds of dirt. Adjacent burials, and even burials on top of previous mounds, resulted in even larger mounds. While some Adena mounds have been identified at almost ninety feet high, most are small containing single burials, can be clustered in one area, and could even include some of the various circular earthworks seen in southern Ohio.

The Hopewell culture²⁰ evolved out of Adena culture because many cultural practices show continuity with the Adena culture. The earthworks themselves indicate an advanced, well-organized society. Objects found with burials in the mounds indicate the Hopewell did not limit themselves to Ohio or the surrounding region. Hopewell trade networks stretched to the Gulf of Mexico for sea shells, North Carolina's Blue Ridge Mountains for mica, the Chesapeake Bay for fossil shark teeth, Michigan's Isle Royale and Keweenaw Peninsula for copper, and Yellowstone for obsidian.

As with the Adena, few habitation sites have been found and examined, and much of what is known about the Hopewell comes from archeological evidence related to their burial practices. Some were buried in the flesh, others were cremated. Burials saw the body placed on bark, netting, or animal skins along with ornaments and implements. A covering of logs or stones encompassed the corpse, which in turn received a covering of bark or poles with a mound of earth topping the arrangement. While some burials were alone, others appeared in groups, usually in limited numbers. Cremations occurred in an area designated for the purpose. Following cremation, ashes were deposited nearby within the shrine where burial offerings were sometimes also ceremoniously placed.

Mounds from these cultures are found at two properties within 4 miles of the reservation and are listed on the National Register of Historic Places.

- The Piketon Mounds (33 Pk 1), located 2 miles north of the boundary, consist today of a single large mound and two smaller mounds that are the remnants of a mound complex and series of graded ways that descended from one terrace to another and ran towards the banks of the Scioto River.

- The Scioto Township Works (33 Pk 22) are located to the southwest of the DOE reservation, approximately 820 feet from the boundary and approximately 0.6 mile from the Perimeter Road. Currently, the Scioto Township Works (33 Pk 22) consists of two separate areas that have been heavily disturbed adjacent to Route 23.

The Shawnee Tribe of Oklahoma has identified a number of village sites in its ancestral homelands in the Ohio Valley, including some along the Scioto River. The Tribe considers that it is descendant from the people of the Hopewell culture who built the many earthwork sites in the region. The Tribe refers to “the Barnes Works in Scioto Township” as “one of the largest sacred sites in North America”.

As previously stated, no burial sites have been encountered within the Portsmouth reservation to date. No religious or sacred sites in current or recent use by Native American groups have been identified.

6.3.3 Visual and Scenic Resources

The proposed GNEP facilities would be located within an existing industrial facility, close to existing production and support facilities, transmission lines, and vacant lots. The facilities are generally not visible off the reservation property or from the highway. Open areas within the facility are maintained as lawns and fields. Open and forested buffer areas, agricultural areas, limited residential areas, and densely forested hills are located adjacent to the proposed site. Rolling hills and small open farmlands dominate the nearby landscape. The proposed GNEP sites would be consistent in terms of scenic attractiveness and visual resources when compared with surrounding land within the DOE property.

6.3.4 Climate, Meteorology, Air Quality, and Noise

This section describes the climatology, meteorology, air quality, and noise levels in the area surrounding the DOE reservation.

6.3.4.1 Climate

The DOE reservation is located in south-central Ohio, west of the Appalachian Mountains. The area’s climate is continental and moist and is characterized by moderate extremes of heat and cold. Summers are warm and humid with about 20 days per year reaching temperatures in excess of 90°Fahrenheit (F), and winters are cold, with temperatures dipping below 0 °F about two days a year. Average precipitation is about 3 to 4 inches per month; the fall months having slightly less precipitation than other months, in the range of 2 to 3 inches per month.

6.3.4.2 Site and Regional Meteorology

For the 1961 through 1990 period in Waverly, about 10 mi north of the site, the annual average temperature was 52.9°F, with the highest monthly average temperature of 74.1°F in July and the lowest of 28.8°F in January. Record extreme maximum and minimum temperatures are 102°F and -24°F. Snowfall in Portsmouth averages 17.3 in. per year, occurring from November to April. Annual average relative humidity in Columbus, Dayton, and Cincinnati was more than 70%.

Surface meteorological data, including wind data, have been collected at the on-site meteorological tower at the 10-, 30-, and 60-m levels. The tower is in the southern part of the site. A comparison of annual wind roses for the period 1995 through 2001 indicates that wind patterns at the 10-m level are different from those at the 30-m and 60-m levels. Winds at the 10-m (33-ft) level appear to be influenced by local topographical and/or vegetative features. Accordingly, wind data at the 30-m (98-ft) level, believed to be representative of the site, are presented in , which was prepared on the basis of hourly surface data from the on-site tower. More than 40% of the time, wind blew from the southwest quadrant, with the prevailing wind being from the south. Average wind speed was about 6.2 mph. Directional wind speed was highest, at 7.4 mph from the northwest, and it was lowest, at 4.0 mph, from the east.

According to weather observations from Columbus, thunderstorms occur an average of 35 days per year. Thunderstorms are most frequent during the period May through August, averaging 29 days per year, and the least frequent in winter, averaging only 2.5 days per year.

Tornadoes are rare in the area surrounding the Portsmouth site, and those that do occur are less destructive in this region than those occurring in other parts of the Midwest. For the period from 1950 through 1995, 656 tornadoes were reported in Ohio, with an average of 14 tornadoes per year. For the same period, 3 tornadoes were reported in Pike County, but most of those were relatively weak, at most, F2 of the Fujita tornado scale.

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Figure 6-12 Wind Rose for Meteorological Tower at 30-Meters

6.3.4.3 Existing Air Emissions

Non-radiological air emissions from USEC are predominant sources in Pike County. Currently, USEC has three OEPA operating permits. The Title V permit for USEC operations has been issued and was effective August 21, 2003, which is a sitewide, federally enforceable operating permit to cover emissions of all regulated air pollutants at the facility. In submissions to the OEPA, USEC reported the following criteria pollutant emissions for the year 2001: 59.86 tons of particulate matter with a mean diameter of 10µm or less (PM₁₀), 1.42 tons of volatile organic compounds (VOCs), 2,627.64 tons of SO₂, and 362.05 tons of NO_x. These emissions are associated with the boilers at the steam plant (which provides steam for the Portsmouth reservation), a boiler at the water treatment plant, an emergency generator, and a trash pump.

Table 6-1 Annual Criteria Pollutant and Volatile Organic Compound Emissions from USEC and DOE Sources at PORTS in 2001

Major Emission Source	Emission Rate (tons per year)					
	SO ₂	NO _x	CO	VOCs	PM ₁₀	PM _{2.5}
USEC Facilities	2,627.64	362.05	NA	1.42	59.86	NA
DOE Facilities ¹	21.5	93.6	58.5	5.7	5.3	NA

Proposed maximum annual emissions based on the assumption that two boilers would operate full time.

DOE operates numerous small sources that release criteria pollutants and VOCs. At the end of 2001, DOE had eight permitted and seven registered air emission sources. In November 2001, DOE began operation of the recirculating hot water plant to provide heat for the DOE facilities that were formerly heated by hot water from the gaseous diffusion process. Proposed maximum annual emissions from plant operations account for most of the DOE emissions. Other emission sources at DOE, which include two landfill venting systems, two glove boxes (not used in 2001), two aboveground storage tanks in the fuel oil storage facility, and two groundwater treatment facilities, emit less than 1 ton per year of conventional air pollutants (on an individual basis).

Airborne discharges of radionuclides from the Portsmouth site are regulated in accordance with 40 CFR Part 61, Subpart H, National Emission Standards for Hazardous Air Pollutants (NESHAPs). Currently, USEC is responsible for most of the sources that emit radionuclides because DOE leased the production facilities to USEC. In 2001, USEC and DOE reported emissions of 0.2 and 0.00063 Curies (Ci) from their radionuclide emission sources, respectively.

6.3.4.4 Air Quality

The Ohio State Ambient Air Quality Standards and the same as the National Ambient Air Quality Standards (NAAQS) are the same for six criteria pollutants (SO₂, NO_x, CO, ozone (O₃), PM, and Pb).

6-2 Primary and Secondary Standards for Each of the Criteria Pollutants²¹

Pollutant	Primary Standard (Health-Based)		Secondary Standard (Welfare-Based)	
	Type of Average	Standard Level Concentration	Type of Average	Standard Level Concentration
PM ₁₀	Annual Arithmetic mean	50 µg/m ³		Same as primary standard
	24-hr average not to be exceeded more than once per year on average over 3 years	150 µg/m ³		Same as primary standard
PM _{2.5}	Spatial and annual arithmetic mean in area	15 µg/m ³		Same as primary standard
	98 th percentile of the 24-hr average	65 µg/m ³		Same as primary standard
O ₃ ^a	Maximum daily 1-hr average to be exceeded no more than once per year averaged over 3 consecutive years	0.12 ppm		Same as primary standard
	3-yr average of the annual fourth highest daily 8-hr average	0.08 ppm		Same as primary standard
NO ₂	Annual arithmetic mean	0.053 ppm		Same as primary standard
SO ₂	Annual arithmetic mean	0.03 ppm	3-hr	0.50 ppm
	24-hr average	0.14 ppm		
CO	8-hr (not to be exceeded more than once per year)	9 ppm		No secondary standard
	1-hr (not to be exceeded more than once per year)	35 ppm		No secondary standard
Lead	Maximum quarterly average	1.5 µg/m ³		Same as primary standard

Abbreviations: µg/m³, micrograms per cubic meter; ppm, parts per million (by volume); hr, hour; yr, year

^a EPA is phasing out the 1-hr, 0.12-ppm standards (primary and secondary) and putting in place the 8-hr, 0.08 ppm standards. However, the 0.12-ppm standards will not be revoked in a given area until that area has achieved 3 consecutive years of air quality data meeting the 1-hr standard.

The Portsmouth site is located in the Wilmington-Chillicothe-Logan Intrastate Air Quality Control Region, which covers the south-central part of Ohio. Currently, Pike county is designated as being in attainment for all criteria pollutants (40 CFR §81.336). Ambient concentration data for criteria pollutants around the site are not available. On the basis of 1997 through 2002 monitoring data, the highest concentration levels for SO₂, NO₂, CO, PM₁₀, and Pb representative of the Portsmouth site are less than 64% of their

respective NAAQS. However, the highest O₃ and PM_{2.5} concentrations are approaching or somewhat higher than the applicable NAAQS. These high ozone concentrations of regional concern are associated with high precursor emissions from the Ohio Valley region and long-range transport from southern states.

Ambient air monitoring stations in and around the site consist of a network of 15 air samplers that primarily collect data on radionuclides released from the site. These data are used to assess whether air emissions from the Portsmouth site would affect air quality in the surrounding area. If a person lived close to a monitoring station, the net dose calculated was 0.00019 millirem per year, which is well below the 10-millirem per year NESHAPs limit applicable to Portsmouth. In addition to the radionuclides, samples for fluoride were collected weekly from 15 ambient monitoring stations in and around PORTS. In 2001, the average ambient concentrations were similar to or less than those collected at the background station, except for a station that is within the process area immediately east of the X-326 building.

Prevention of significant deterioration (PSD) regulations (40 CFR §52.21) limit the maximum allowable incremental increases in ambient concentrations of SO₂, NO₂, and PM₁₀ above established baseline levels. The PSD regulations, which are designed to protect ambient air quality in Class I and Class II attainment areas, apply to major new sources and major modifications to existing sources. The nearest Class I PSD areas are Otter Creek Wilderness Area in West Virginia, about 177 mi east of the Portsmouth site; Dolly Sods Wilderness Area in West Virginia, about 193 mi east of the site; and Mammoth Cave National Park in Kentucky, about 200 mi southwest of the site. These Class I areas are not located downwind of prevailing winds at the Portsmouth site.

6.3.4.5 Existing Noise Environment

The Noise Control Act of 1972, along with its subsequent amendments, delegates authority to the states to regulate environmental noise and directs government agencies to comply with local community noise statutes and regulations. The State of Ohio and Pike County, where the Portsmouth site is located, have no quantitative noise-limit regulations. The EPA has recommended a maximum noise level of 55 dB to protect against outdoor activity interference and annoyance. This level is not a regulatory goal but provides “an additional margin of safety.” For protection against hearing loss in the general population from non-impulsive noise, the EPA guideline recommends an equilibrium noise level for 24 hours of 70 dB or less.

The noise-producing activities within the Portsmouth site are associated with processing and construction activities and local traffic, similar to those at any other typical industrial site. During site operations, noise levels near the cooling towers are relatively high, but most noise sources are enclosed in the buildings. Currently, the site is in cold standby mode, so no major noise-producing activities exist on site. Another noise source is associated with rail traffic in and out of the Portsmouth site. In particular, train whistle

noise, at a typical noise level of 95 to 115 dB, is high at public grade crossings. Currently, rail traffic noise is not a factor in the local noise environment because of infrequent traffic, less than one train per week.

The Portsmouth site is in a rural setting, and no residences or other sensitive receptor locations (*e.g.*, schools, hospitals) exist in the immediate vicinity of any noisy on-site operations. Ambient sound level measurements around the site are not currently available; the ambient noise level around the site is relatively low, however, except for infrequent vehicular noise. In general, the background environment is typical of rural areas; day-night average sound level from the population density in Pike County is estimated to be about 40 dB.

6.3.5 Geology, Minerals, and Soil

This section provides a brief description of the regional and local geology, including bedrock and soil characteristics and seismicity. There are not any economically valuable mineral resources, including oil and gas resources, which could be recovered from the potentially affected area.

The topography of the Portsmouth site area consists of steep hills and narrow valleys, except where major rivers have formed broad floodplains. The site is underlain by bedrock composed of shale and sandstone. The Portsmouth site is situated within the Appalachian Plateau Physiographic Province of the Appalachian Highland region near its northwestern terminus at the Central Lowlands Province. The Appalachian Plateau is characterized by deeply dissected valleys and nearly accordant ridge tops. The summits of the main ridges just east of the Scioto River rise to an altitude of more than 1,100 ft above mean sea level, with relief of up to 500 ft from the bottom of the valleys.

Portsmouth is located within the Portsmouth paleoriver valley. Surface and near-surface geology at the site have been heavily influenced by glaciation and the resultant ice damming and drainage reversals. The site is located in an abandoned river valley that was filled with lacustrine (lake) sediments deposited during the existence of prehistoric Lake Tight. The sedimentary units of interest at the site are, in ascending order, Ohio Shale, Bedford Shale, Berea Sandstone, Sunbury Shale, Cuyahoga Shale, Gallia Sand, and Minford Clay.

The surficial soils at the site consist of shallow fills, lacustrine deposits and older alluvium, which are underlain by native bedrock. The fill materials consist of mostly silty clays, and lacustrine deposits which consist mostly of silts and clay, and the older alluvium consists of clayey sands and gravels. The surficial groundwater table is in the lacustrine deposits at depths between 10 and 15 feet below existing grade in the main plant area.

Little soil information is available about the subsurface conditions of the northeast corner location, but it is assumed that the soil conditions are generally similar. The depth of rock in this area may actually be shallower, and there is little likelihood that there is any fill material in that parcel. A portion of this area was stripped at various times during the construction at the site for use as borrow materials.

Rock will be found within 30 feet or less of existing grade. The rock profile of the site consists of Cuyahoga Formation (~60 feet thick), the Sunbury Formation (~20 feet thick), the Berea Formation (~30 feet thick), and the Bedford Formation (~100 feet thick).

The Sunbury shale ranges in thickness from 0 to 20 feet, with an average thickness of 10 feet. Where present, the Sunbury shale acts as a confining layer over the Berea sandstone, which has a relatively uniform thickness of about 30 feet. Where the Sunbury is absent or very thin, the Berea and Gallia aquifers behave essentially as one unit. The Berea is underlain by about 100 feet of Bedford shale beneath the Portsmouth site.

There have been no historical earthquakes within 25 miles of the site. The largest recorded seismic event in the area was the Sharpsburg, Kentucky, earthquake of July 1980. Sharpsburg is located approximately 70 miles south of the DOE reservation. That earthquake registered a magnitude of 5.3 on the Richter Scale and a Modified Mercalli intensity of VII. The Portsmouth site is within 60 miles of the Bryand Station-Hickman Creek Fault. No correlation has been made between this fault and historical seismicity. The White Mountain fault zone has been identified as potentially being a capable fault. The fault is about 155 miles south-southwest of the site and is reported to be 20.5 miles in length.

6.3.6 Water Resources

This section presents a discussion of the surface water and its associated resources (floodplains) and groundwater in the vicinity of the DOE reservation, including the regional and local surface water features (rivers/streams and lakes/ponds) surrounding the reservation, as well as the floodplains located on the reservation. The discussion of surface water describes the existing features, summarizes the existing National Pollutant Discharge Elimination System permitted outfalls from the reservation to such features, and concludes with a discussion of water quality and its designated uses. The discussion of floodplains presents the location and attributes of such features on the reservation. The groundwater discussion describes the regional groundwater aquifers, the groundwater well fields associated with the DOE reservation, and the onsite groundwater conditions and remediation activities.

6.3.6.1 Surface Water Features

The DOE reservation is within the Lower Scioto River watershed. The reservation occupies an upland area at an elevation of 670 feet above mean sea level and is bordered by ridges of low-lying hills. Surface waters drain from PORTS via a network of tributaries to the Scioto River located approximately 2 miles to the west. The average flow in the Scioto River is 2.1×10^6 gallons per minute. The 10-year low-flow discharge at Higby is 1.4×10^5 gallons per minute. The Scioto River discharges into the Ohio River approximately 25 miles south and downstream of the reservation. There are no known public- or private-water supplies draw from this section of the Scioto River.

Surface water features on the DOE property include streams, ditches, holding ponds, and lagoons. There are four lagoons, eight holding ponds, several unnamed tributaries and drainage pathways, and four named streams and ditches on the DOE reservation. The four streams include Little Beaver Creek, Big Run Creek, the West Ditch, and the DOE Piketon Tributary. Little Beaver Creek drains the northern portion of the reservation, Big Run Creek drains the east-central and southern portions of the reservation, the West Ditch drains the west-central portion of the reservation, and the DOE Piketon Tributary drains the south-western portion of the reservation. Storm water at the DOE reservation is collected by a series of storm water sewers and open culverts. The reservation has eight specific storm water collection areas, which transmit the storm water flow to one of the onsite streams or ditches. All of the streams and ditches transport the surface water, including storm water, from the reservation to the Scioto River.

The largest stream on the DOE reservation is Little Beaver Creek, which discharges into Big Beaver Creek, which then discharges into the Scioto River. Upstream of the plant, Little Beaver Creek flows intermittently during the year. Onsite, it receives treated wastewater from a holding pond (via the east drainage ditch) and storm water runoff from the northwestern and northern sections of the reservation via several storm sewers, water courses, and the north holding pond. The average release to Little Beaver Creek for 1993 was 951 gallons per minute. The next largest stream, Big Run Creek, receives effluent from the South Holding Pond, and flows offsite to the southwest where it joins the Scioto River approximately 4 river miles from the reservation. Storm sewers in the southern end of the reservation discharge to the South Holding Pond. The DOE Piketon Tributary, is a small intermittent watercourse leading from Holding Pond No. 1 to the Scioto River, 1 stream-mile) downstream. The West Ditch receives surface water from existing open drainage swales and from Holding Pond No. 2, and flows for 4 stream-miles before discharging into the Scioto River.

The Ohio Administrative Code (OAC 3745-1-09) for the Scioto River drainage basin classifies the designated uses of the surface waters within and surrounding the DOE reservation as, for example, aquatic life habitat, water supply, or recreational use designations. The most stringent criteria associated with any one of the use designations

assigned to a water body will apply to that water body. The surface water features that drain the DOE reservation as well as the Scioto River and their designated uses are as follows:

- Little Beaver Creek: State Resource Water; Warm Water Habitat; Agricultural Water Supply; Industrial Water Supply; and Primary Contact Recreation.
- Big Run Creek: Warm Water Habitat; Agricultural Water Supply; Industrial Water Supply; and Primary Contact Recreation.
- DOE Piketon Tributary: Limited Resource Water; Agricultural Water Supply; Industrial Water Supply; and Secondary Contact Recreation.
- West Ditch: Warm Water Habitat; Agricultural Water Supply; Industrial Water Supply; Secondary Contact Recreation.
- Scioto River: Warm Water Habitat; Public Water Supply; Agricultural Water Supply; Industrial Water Supply; Primary Contact Recreation.

The designated uses of the rivers, streams, and ditches aid in defining the parameters associated with the National Pollutant Discharge Elimination System permits issued by the State of Ohio. Currently, the DOE reservation maintains a total of 19 permitted outfalls, which are managed by both DOE and the United States Enrichment Corporation.

The domestic wastewater generated by the offices and change houses is treated on the reservation at the sewage treatment plant. The design capacity of the sewage treatment plant is 601,000 gallons per day, and in 2003, the facility operated at 27 percent of that capacity. The discharge from the sewage treatment plant is within its National Pollutant Discharge Elimination System permit criteria.

6.3.6.2 Surface Water Quality

Surface water quality is ensured by monitoring for the OEPA required chemical parameters and DOE or NRC required radionuclides; monitoring is based on the chemical and radiological characteristics of the water that flows into the outfall. Permitted outfalls managed by the United States Enrichment Corporation were in compliance with contaminant concentration discharge limits in 2002. Permitted outfalls managed by DOE were in compliance with contaminant concentration discharge limits in 2003. In addition to the characteristics of the water the flows into the outfall, the National Pollutant Discharge Elimination System permits consider the designated use and the associated water quality of the receiving water body.

Total radioactivity released from the DOE external outfalls was 0.0049 Curie of uranium isotopes and 0.00004 Curie of technetium-99. Total radioactivity released from the United States Enrichment Corporation external outfalls was 0.0296 Curies of uranium and 0.0335 Curies of technetium-99. In 2003, an estimated 9.5 pounds of uranium were discharged from DOE National Pollution Discharge Elimination System outfalls and 46 pounds were discharged from United States Enrichment Corporation outfalls, for a total

of 55.5 pounds. The analytical results were compared to appropriate standards which require that off-site radiation doses do not exceed for all exposure pathways 100 millirem per year above background. All analytical results from the external NPDES outfalls are well below these DOE standards.

In addition to the external NPDES outfalls, the surface waters are monitored for radioactive contamination at 14 locations, including locations upstream and downstream from PORTS. The surface water monitoring results for 2001 indicated that the measured radioactive contamination was consistently less than the applicable drinking water standards. Uranium concentrations were detected at levels similar to those that occurred naturally in the Scioto River.

Sediment samples are also collected at the locations where surface water samples are collected by the United States Enrichment Corporation, and at the permitted outfalls on the east and west sides of the DOE reservation. In 2001, the maximum uranium concentration in sediment was 5.6 micrograms per gram, at background sampling location (RM-10W). The maximum technetium-99 concentration was 16 picoCuries per gram, at location RM-7 downstream on Little Beaver Creek. Several inorganic substances and polychlorinated biphenyls are also monitored; results of the monitoring indicate no major difference between upstream and downstream concentrations. Polychlorinated biphenyls were not detected in sediments.

6.3.6.3 Floodplains

Floodplains are land areas adjacent to streams or rivers susceptible to being inundated by stream-derived waters. The Federal Emergency Management Agency Flood Insurance Rate Map indicates that the 100-year floodplain for Little Beaver Creek extends from the confluence with the Big Beaver Creek upstream to the rail spur. This is within the northwestern portion of the DOE reservation. No portion of the floodplain for Big Beaver Creek is located within the reservation boundary. The DOE reservation has not been affected by flooding of the Scioto River. The highest recorded flood elevation of the Scioto River in the vicinity of the site was 570 feet above mean sea level in January 1913. The reservation occupies an upland area at an elevation of 670 feet above mean sea level.

6.3.6.4 Groundwater

Near surface groundwater beneath the Portsmouth site occurs in the unconsolidated Quaternary age Minford and Gallia units, and in the underlying Mississippian age Sunbury, Berea, and Bedford bedrock units. These five hydrogeological units are important for groundwater flow and contaminant migration beneath PORTS. Recharge to the unconsolidated deposits beneath the site is from the infiltration of direct precipitation while the bedrock units are believed to receive recharge from participation on outcrop areas to the west.

The unconfined Gallia aquifer beneath the Portsmouth site is comprised of the lower silt unit of the Minford and, where present, the Gallia sand. The Gallia sand is discontinuous on areal extent due to its deposition as localized infilling of an ancient streambed. The Gallia aquifer overlies the Sunbury shale or, in its absence, the Berea sandstone. The Minford has a total average thickness of 23.9 feet beneath the site. The basal Minford silt has an average thickness of 7.6 feet, while the Gallia sand has an average thickness of 3.4 feet, resulting in a combined average thickness of the Gallia aquifer of approximately 11 feet. The bottom of the Gallia aquifer beneath the site occurs at elevation ranging from 630 feet to 640 feet.

Hydraulic conductivity values have been determined for the Gallia and Berea aquifers beneath the Portsmouth site. The values determined for the Gallia aquifer range from 5.3×10^{-2} to 3.9×10^{-5} cm/sec with a mean value of 1.2×10^{-3} cm/sec. The values determined for the Berea sandstone range from 5.3×10^{-3} to 1.6×10^{-6} cm/sec with a mean value of 5.7×10^{-5} cm/sec.

Groundwater quality has been studied extensively as part of DOE's environmental restoration activities. Groundwater quality is monitored for radioactive and nonradioactive constituents in 11 areas at and near the facility using more than 400 wells. On site, five areas of groundwater contamination have been identified that contain contaminants. The main contaminants are volatile organic compounds (mostly trichloroethylene) and radionuclides (*e.g.*, uranium, technetium-99). Data from the 2000 annual groundwater monitoring showed that five contaminants exceeded primary drinking water standards at the DOE reservation: beryllium, chloroethane, americium, trichloroethylene, and uranium. Alpha and beta activity also exceeded the standards. The concentration of contaminants and the lateral extent of the plume did not significantly increase in 2001.

Two phytoremediation projects to clean up trichloroethylene-contaminated groundwater are currently underway at the Portsmouth site. The phytoremediation projects involve the planting of hybrid poplar trees about 5 ft apart in areas of contamination. The tree roots take up 50 to 350 gal of water per day per tree and also provide nutrients to the soil, which accelerates bacterial breakdown of contaminants in the soil.

6.3.7 Ecological Resources

This section describes the ecological resources, including terrestrial resources (vegetation and wildlife); rare, threatened, and endangered species; wetlands; and other environmentally sensitive areas within the DOE reservation at Piketon.

6.3.7.1 Vegetation

The vegetative cover in surrounding Pike County consists mostly of hardwood forests and field crops. The most common type of vegetation on PORTS is managed grassland, which makes up 30% of the site or about 1,100 acres. Grasses are the dominant species in

these communities, and they are maintained by periodic mowing. The other types of habitat on the site include oak-hickory forest which covers 17% of the site and occurs on well-drained upland areas; old-field communities, approximately 11% of the site, consisting of tall weeds, shade-intolerant trees and shrubs that occur in previously disturbed areas; upland mixed hardwood forest which also covers 11% of the site and consists of black walnut, black locust, honey locust, black cherry, and persimmon in these mesic to dry upland communities; and riparian forest which occurs in low, periodically flooded areas near streams and makes up 4% of the site, the dominant species in riparian forest communities are cottonwood, sycamore, willows, silver maple, and black walnut. Within the area surrounded by Perimeter Road, the Portsmouth site consists primarily of open grassland (including areas maintained as lawns) and developed areas consisting of buildings, paved areas, and storage yards. Wetlands are also located around one of the Cylinder Storage Yards and are associated with the tributaries of Little Beaver Creek. The flora associated with the wetlands includes emergent vegetation including sedges, rushes, cat-tails, and various woody species (trees and shrubs) tolerant of the saturated conditions of wetlands.

For the two proposed GNEP locations, one is within the Perimeter Road and consists of existing building and open grassland maintained as lawns and one is in the northeast section of the site in an area where no prior industrial activities have occurred. This site, partially a hilly, forested area of PORTS, was harvested for timber before the Portsmouth facilities were established. The vegetation recorded for the flatter area of the proposed GNEP site consists mainly of old fields and managed grasslands that are not considered unique habitat or environmentally sensitive areas. Little Beaver Creek runs through the southwestern part of the area and is identified as having riparian forest along its banks. Oak-hickory forest borders the riparian forest.

Two state-protected plant species that occur on the Portsmouth site are Carolina yellow-eyed grass, listed as endangered, and Virginia meadow-beauty, listed as potentially threatened.

6.3.7.2 Wildlife

Habitats on the Portsmouth site support a relatively high diversity of terrestrial and aquatic wildlife species. Species observed on the site include 27 mammal species, 114 bird species, 11 reptile species, and 6 amphibian species. Ground-nesting species include bobwhite and eastern box turtle. Various species of reptiles and amphibians are associated with streams and other surface water on the site. Migrating waterfowl use site retention ponds. The aquatic habitats on PORTS include the various holding ponds, intermittent streams, and streams that flow from or through the reservation.

Previous NEPA documents have identified the potential existence of rare, threatened, and endangered species in the vicinity of PORTS. No occurrence of federal-listed plant or animal species on the Portsmouth site has been documented. The Indiana bat, both

federal- and state-listed as endangered, has been reported in the vicinity of the Portsmouth site and may occur on the site during spring or summer; however, no Indiana bats were collected during surveys in 1994 and 1996. Roosting and nursery sites may include forested areas with loose barked trees and standing dead trees. Potential summer habitat for the Indiana bat was identified within the corridors along Little Beaver Creek, and the Northwest Tributary stream. However, most of the Portsmouth site was found to have poor summer habitat because of the small size, isolation, and insufficient maturity of the few woodlands on the site. The Little Beaver Creek stream corridor has been identified as a potential habitat for the Indiana bat. The Indiana bat has been recorded in the northwest part of the Portsmouth site; however, none were found along the Little Beaver Creek stream corridor. Prior to use of the forested site, surveys for endangered species would need to be performed.

The sharp-shinned hawk, listed by the State of Ohio as endangered, and the rough green snake, a species of special interest in Ohio, have been observed on the Portsmouth site. Both of these species inhabit moist woods. The timber rattlesnake, listed by the State of Ohio as endangered, occurs in the vicinity of the Portsmouth site but has not been found on the site. Habitat for the timber rattlesnake would be “high, dry ridges” during the winter. Possibly, the hilly, forested areas of the site could have habitat for the timber rattlesnake. The timber rattlesnake was not recorded during any of the field studies performed for the Portsmouth site.

The aquatic habitats on the DOE reservation include the various holding ponds, intermittent streams, and streams that flow from or through the reservation. Little Beaver Creek and the West Ditch are designated warm water habitats. Warm water habitats are capable of supporting and maintaining a balanced, integrated, adaptive community of warm water aquatic organisms having a diverse species composition and functional organization. The aquatic habitat associated with Little Beaver Creek supports good to exceptional fish communities downstream of the discharge from the DOE reservation, and fair fish communities upstream due to intermittent stream flow. Little Beaver Creek supports 34 total fish species and four hybrids. The aquatic habitat associated with the DOE Piketon Tributary is a limited resource water, which does not meet one or more of the warm water habitat characteristics.

6.3.7.3 Wetlands

A wetland survey of the Portsmouth site was conducted in 1995. Approximately 34 acres of wetlands occur on the site, excluding retention ponds. Forty-one wetlands meet the criteria for jurisdictional wetlands, while four wetlands are non-jurisdictional. Wetlands on the site primarily support emergent vegetation that includes cattail, great bulrush, and rush. Palustrine forested wetlands occur on the site along Little Beaver Creek. The Ohio State Division of Natural Areas and Preserves has listed two wetland areas near the site as significant wetland communities: (1) a palustrine forested wetland, about 5 mi east of the site, and (2) Givens Marsh, a palustrine wetland with persistent emergent vegetation,

about 2.5 mi northeast of the site. The 100-year floodplains in the vicinity of the PORTS include Big Beaver Creek and Little Beaver Creek. Both of these floodplains lie outside the area surrounded by the Perimeter Road.

6.3.7.4 Environmentally Sensitive Areas

No state or national parks, conservation areas, wild and scenic rivers, or other areas of recreational, ecological, scenic, or aesthetic importance are located within a 1-mile radius of PORTS.

6.3.8 Socioeconomic Conditions and Local Community Services

This section describes current socioeconomic conditions and local community services within the region of influence of siting two GNEP facilities at PORTS. The *region of influence* is defined as a four-county area in southern Ohio comprising Jackson, Pike, Ross, and Scioto Counties. This region encompasses the area in which workers are expected to spend most of their salary, and in which a significant portion of site purchase and non-payroll expenditures from the construction, manufacturing, operation, and decontamination and decommissioning phases of the proposed project are expected to take place. The counties included in the region of influence were selected primarily on the basis of the current residential locations of United States Enrichment Corporation and USEC workers at the DOE reservation in Pike County. Currently, approximately 92 percent of these workers reside in the four selected counties. Geographically, Ross, Jackson, and Scioto counties bound Pike County to the North, East and South, respectively.

6.3.8.1 Population Characteristics

The population in the region of influence is characterized in terms of the major population centers around the proposed site, population growth trends, residential locations of current workers on the DOE reservation, and significant transient and special populations. The extent to which surrounding populations qualify as a minority or a low-income population is discussed in the environmental justice section, Section 6.3.8.4.

6.3.8.1.1 Major Population Centers

The major population centers in the four county region of influence are as follows:

- **Piketon** is the nearest residential center to the DOE reservation. Located in Pike County, this town is approximately 4 miles north of the DOE reservation on U.S. Route 23. In 2000, the population of Piketon was 1,907.
- **Waverly** is the largest town in Pike County. Located 8 miles north of the DOE reservation, the population of Waverly was 4,433 in 2000.

- The largest population center in the region of influence is **Chillicothe**, which is located in Ross County. Chillicothe is 27 miles north of the DOE reservation, and had a population of 21,796 in 2000.
- **Portsmouth** is in Scioto County and is 27 miles south of the DOE reservation. The population of Portsmouth was 20,909 in 2000.
- **Jackson** is located in Jackson County and is 26 miles east of the DOE reservation. In 2000, Jackson's population was 6,184.

6.3.8.1.2 Population Growth Trends

The population of the region of influence was 212,876 people in 2000, having grown 4.3 percent since 1990. This growth was marginally lower than the Ohio population growth rate of 4.7 percent in the same decade.

During the 1990s, each of the counties in the region of influence, with the exception of Scioto County, experienced a growth in population. Pike County recorded a population growth rate of 14.2 percent between 1990 and 2000, while Jackson and Ross counties grew by 8 percent and 5.8 percent, respectively, in the same decade. The growth rates for these three counties exceeded Ohio's overall growth rates in that period. In contrast, Scioto County registered a marginal decline (-1.4 percent) in population between 1990 and 2000. The area population is expected to increase by 3.8 percent by the year 2010, compared to a projected overall Ohio growth rate of 2.8 percent in the same period. All counties in the region of influence, except for Scioto County, are projected to experience positive population growth between 2000 and 2010.

6.3.8.1.3 Residential Locations of Workers

In January 2004, there were 1,223 United States Enrichment Corporation and USEC workers employed at the DOE reservation (reflecting the current cold standby status). Of these workers, 49 percent live in Scioto County, 22 percent live in Pike County, 12 percent live in Ross County, and 10 percent live in Jackson County (USEC, 2005). The remaining eight percent of United States Enrichment Corporation and USEC workers live outside the region of influence.

6.3.8.1.4 Significant Transient and Special Populations

In addition to the residential population, there are institutional, transient, and seasonal populations in the area. Institutional populations include school and hospital populations. The transient population consists of visitors participating in various seasonal, social, and recreation activities within the local area. Seasonal populations are also present. For example, usage of Lake White State Park, located approximately 6 miles north of the DOE reservation, is occasionally heavy and concentrated on the 92 acres of land closest to the lake. Most of the land surrounding the lake is privately owned. The Lake White

State Park offers recreation (*i.e.*, boating, fishing, water skiing, and swimming). There are 10 non-electric campsites for primitive overnight camping. These populations are likely to be unaffected by the proposed siting of GNEP facilities at PORTS.

6.3.8.2 Economic Trends and Characteristics

This section describes employment in the region of influence and at the DOE reservation in particular. It also describes per capita income in the region.

6.3.8.2.1 Employment in the Region of Influence

The past decade has seen a slight employment shift from the government, construction, and farm sectors towards the service, wholesale and retail trade, and manufacturing sectors within the region of influence. The service sector provides the highest percentage of employment in the region, at 24.7 percent, followed closely by the wholesale and retail trade with 21.7 percent, manufacturing with 17.9 percent, and government enterprises with 16.6 percent. Pike County shows a substantially higher rate of manufacturing employment than other counties; and Scioto County shows the highest rate of services employment.

The unemployment rate in the region of influence is higher than for the State as a whole. The regional unemployment rate, which was 7.8 percent in 1998, was 7.7 percent as of 2002. The average unemployment rate for the State of Ohio was 5.7 percent in 2002, up from 4.3 percent in 1998. Although the overall region of influence unemployment rate decreased between 1998 and 2002, there are cross-county differences in employment trends within the region. Only Scioto County experienced a decline in unemployment levels between 1998 and 2002. Jackson, Pike, and Ross counties registered increases in unemployment rates in the same period.

6.3.8.2.2 DOE Reservation Employment

United States Enrichment Corporation and USEC employed a total of 1,223 workers at the site, as of January 2004. This number is approximately 11 percent of the total individuals working within Pike County. In addition, DOE, its subcontractors, and the Ohio Army National Guard employ an additional 374 workers at the DOE reservation.

6.3.8.2.3 Income

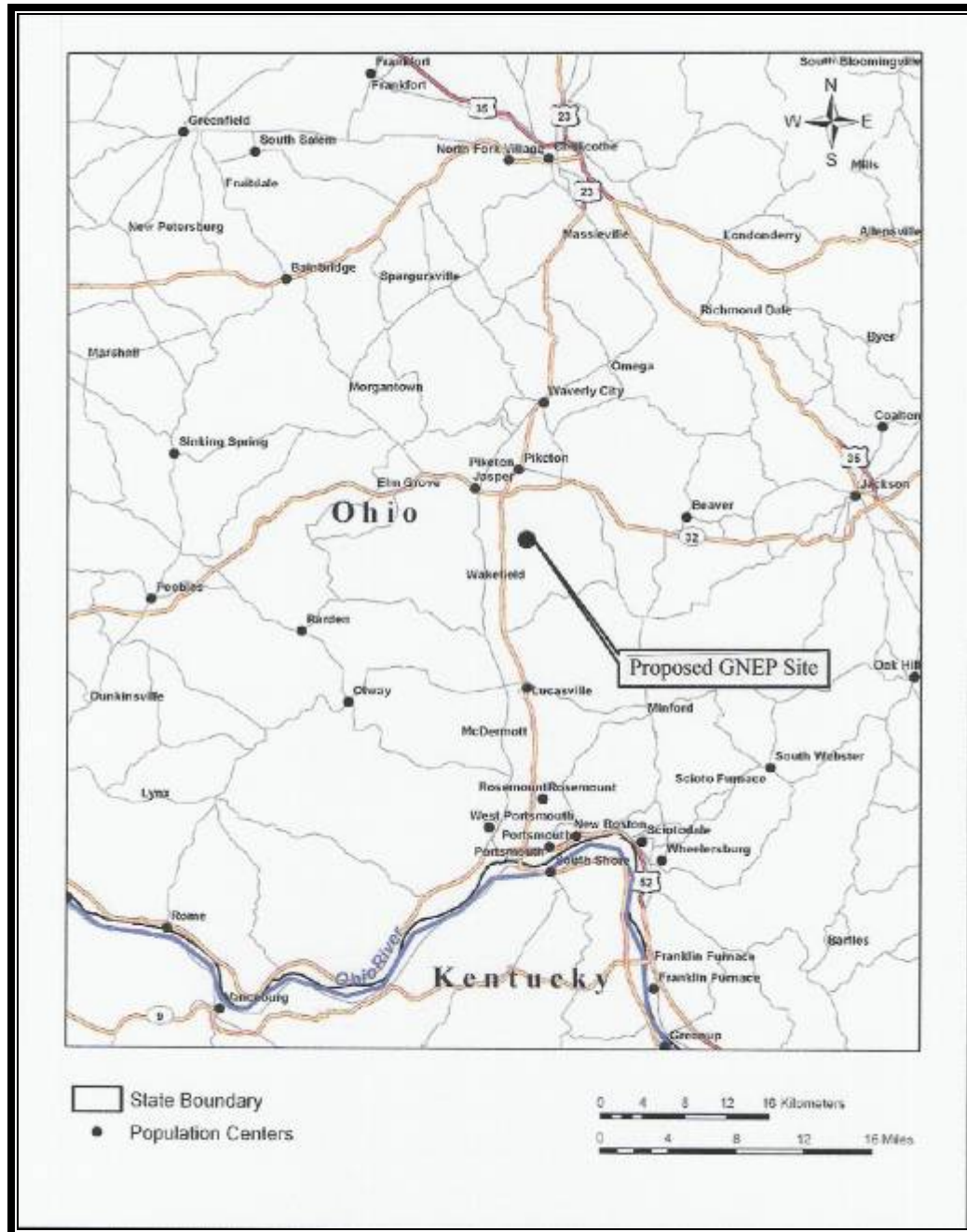
From 2000 income data, the following income data is provided:

- Per capita income in the region was \$20,255. This is 28.2 percent lower than the State of Ohio's average per capita income of \$28,208 in the same year.

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- Per capita income in 2000 in the region of influence recorded a 56 percent nominal increase (not adjusted for inflation) from the 1990 level of \$13,003.
- Per capita incomes in the region of influence vary significantly from one county to the next, ranging from a low of \$20,449 in Jackson County to a high of \$23,123 in Ross County in 2002.

Figure 6-13 Population Centers in the Vicinity of PORTS



6.3.8.3 Housing Resources and Community and Social Services

This section describes housing and social services in the region, including: schools; hospitals and nursing homes; law enforcement, fire fighting, and other public services; and infrastructure and utilities.

6.3.8.3.1 *Housing*

Between 1990 and 2000, all four counties registered an increase in the total number of owner-occupied and rental housing units. Vacancy rates among rental units rose in each county during this period. As of 2000, there was an 8.6 percent vacancy rate among rental units (amounting to 1,963 vacant rental units) and a 1.8 percent vacancy rate among owner occupied units (amounting to 1,048 vacant owner occupied units) in the region. Housing density in the region of influence averages 41.2 units per square mile, and the median value is \$74,550. In contrast, the Ohio State average housing density is 116.8 units per square mile, and the median value is \$103,700 for the State.

6.3.8.3.2 *Schools*

The two school systems in the area are the Pike County Schools and the Scioto County Schools. However, only Pike County has school facilities within 5 miles of the DOE reservation: one private school that includes preschool through grade 12; two elementary schools, both of which include a preschool program; one junior high school; and one high school. The combined enrollment for the school year 2003-2004 was approximately 2,437. The total school population within 5 miles, including faculty and staff, was 2,718. Four facilities within 5 miles of the DOE reservation provide daycare or schooling for preschool-aged children and after-school care for school-aged children. One facility has 114 registered children and is located in Piketon. It is apparent from school data that the student-to-teacher ratio in Jackson, Ross, and Pike counties is higher than the Ohio average.

6.3.8.3.3 *Hospitals and Nursing Homes*

Pike Community Hospital is the hospital closest to the DOE reservation, and is located approximately 7.5 miles north of the DOE reservation on State Route 104 south of Waverly. The onsite health protection program provides services for individuals to meet regulatory requirements and to maintain a high level of employee health. The Fire Station maintains a first aid room and provides ambulance service for emergency conditions. Pike Community Hospital provides healthcare services to PORTS workers. The facility has 66 licensed beds. No other acute care facilities are located in Pike County. Adena Health Center operates as an urgent care facility, located approximately 7.5 miles north of the DOE reservation. Piketon and Waverly Family Health Centers, both located north

of the DOE reservation, are also available during working hours for minor emergencies involving PORTS workers.

Three licensed nursing homes are located in the Piketon area, an additional one is in Wakefield, and another in Beaver. Four of these five nursing homes are located within 5 miles of the DOE reservation. The largest of these facilities is a 193-bed facility in Piketon. The combined licensed capacity of the facilities neighboring the DOE reservation is approximately 375. Data on health care professionals indicate that all counties in the region had a lower level of service than the Ohio average, which is 3.3 physicians per 1,000 persons.

6.3.8.3.4 Law Enforcement, Fire Fighting, and Other Public Services

Several State, county, and local police departments provide law enforcement in the region of influence. Pike County, which is where the DOE reservation is located, has 19 officers and provides law enforcement services to the site. Other counties in the region have a total of 101 full-time officers, 16 in Jackson, 32 in Ross, and 53 in Scioto.

According to the U.S. Fire Administration's National Fire Department Census Database, there are 43 career and volunteer fire departments in the region of influence. The career fire departments include Portsmouth Fire Department, which has three engine houses comprising four engines, two ladders, and one rescue vehicle. In addition, the Chillicothe Fire Department consists of three units, each with 13 firefighters; three emergency medical service vehicles; and one 100-foot platform.

6.3.8.3.5 Tax Structure and Distribution

The average property tax rates for Ohio cities are divided into three separate classifications: Class I Real (residential and agricultural), Class II Real (commercial, industrial, mineral, and public utility), and Class III Tangible Personal (general and public utility). For Waverly, in Pike County, the rate is \$0.07412 per \$1,000 for all three classifications; for Portsmouth, in Scioto County, the rate is \$0.06663 per \$1,000 for all three classifications; for Jackson, in Jackson County, the rate is \$0.04864 per \$1,000 for all three classifications; and in Chillicothe, in Ross County, the Class I rate is \$0.05401, the Class II rate is \$0.05386, and the Class III rate is \$0.05405 per \$1,000 (Ohio Department of Taxation, 2003).

The State of Ohio has a graduated personal income tax. For example, the tax rate for incomes ranging from \$20,000 to \$40,000 is \$445.80 plus 4.5 percent of excess over \$20,000. For incomes ranging from \$40,000 to \$80,000, the tax rate is \$1,337.20 plus 5.2 percent of excess over \$40,000. And for incomes ranging from \$80,000 to \$100,000, the tax rate is \$3,417.60 plus 5.943 percent of excess over \$80,000. Ohio also has a 6.0 percent sales tax rate that was raised temporarily from 5.0 percent on July 1, 2003, with the present rate authorized until June 30, 2005 (Ohio Department of Taxation, 2003). In

addition to the State sales tax, each county in Ohio has a county sales tax. Jackson, Ross, and Scioto Counties have a county sales tax rate of 1.5 percent and Pike County has a county sales tax rate of 1.0 percent.

6.3.8.4 Environmental Justice

Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. On February 11, 1994, Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” was signed which directs all Federal agencies to develop strategies for considering environmental justice in their programs, policies, and activities. Environmental justice is described as “identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” Both DOE and NRC have evaluated environmental justice when evaluating the environmental impacts of siting new facilities at PORTS.

To determine if environmental justice will have to be considered in greater detail, the NRC, in their evaluation, compared the percentage of minority and low-income populations in Census tracts in the area being assessed to the State and county percentages. If the minority or low-income population in a given tract exceeds 50 percent or is significantly greater than the State or county percentage, environmental justice will be considered in greater detail. In other words, a population is minority if its percentage is either greater than 50 percent or greater than the percentage in the United States or its state.

6.3.8.4.1 Minority Populations

The Council on Environmental Quality (CEQ) defines the following groups as *minorities*: Black/African American, Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, and Hispanic populations (regardless of race). A minority population exists where either (a) the minority population of the affected area exceeds 50 percent; or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

This section summarizes data from the 2000 U.S. Census in the area surrounding PORTS to evaluate environmental justice implications of the proposed action with respect to minority populations. The earliest release of 2000 census data that included information necessary to identify minority populations identified individuals both according to race and Hispanic origin. It also identified individuals claiming multiple racial identities (up to six races). For the American Centrifuge Plant EIS, NRC considered the minority population as all non-White persons and White persons of Hispanic origin. In 2000, of

the 206 census tracts within 50 mi (80 km) of the proposed conversion facility at Portsmouth, 12 had minority populations in excess of state-specified thresholds, a total of 7,735 minority persons in all, 3.7% of the population is minority within the region of influence as well as in Pike County. There are two census tracts in which minority populations either exceed 50 percent and/or are significantly greater than the State or county percentage. These tracts and their locations relative to the proposed PORTS site are detailed in Figure 6-16, Census Tracts within 50 Miles of PORTS with Minority Populations Exceeding State Levels.

6.3.8.4.2 Low Income Populations

CEQ defines *low-income* by using the annual statistical poverty thresholds from the U.S. Census Bureau. A low-income community exists when the low-income population percentage in the area of interest is “meaningfully greater” than the low-income population in the general population. As recommended by the CEQ guidelines, the environmental justice analysis identifies low-income populations as those falling below the statistical poverty level identified annually by the U.S. Bureau of the Census in its reports on income and poverty.

The Census Bureau defines poverty levels on the basis of a statistical threshold that considers for each family both overall family size and the number of related children younger than 18 years old. For example, in 1999, the poverty threshold annual income for a family of three with one related child younger than 18 was \$13,410, while the poverty threshold for a family of five with one related child younger than 18 was \$21,024 (see U.S. Bureau of the Census 2000). The 2000 census used 1999 thresholds because 1999 was the most recent year for which annual income data were available when the census was conducted. If a family fell below the poverty line for its particular composition, the census considered all individuals in that family to be below the poverty line.

To identify census tracts with disproportionately high low-income populations, the percentage of low-income persons in the state containing a given tract as a reference point was used. In 1999, of the 206 census tracts within 50 mi (80 km) of the proposed GNEP facilities at Portsmouth, 142 had low-income populations in excess of state-specified thresholds, a total of 133,303 low-income persons in all. In Pike County, 18.6% of the individuals for whom poverty status was known in 1999 were low-income.

Figure 6-17, Census Tracts within 50 Miles of PORTS with Low Income Populations, identifies census tracts within a 50-mile radius of the proposed PORTS site that contain low-income populations in excess of the threshold criteria. There are 18 census tracts in which low-income populations either exceed 50 percent and/or are significantly greater than the State or county percentage.

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Figure 6-14 Census Tracts within 50 Miles of PORTS with Minority Populations Exceeding State Levels

**Figure 6-15 Census Tracts within 50 Miles of PORTS with Low Income Populations
Exceeding State Thresholds**

Within the 50-mile radius around the PORTS site, there are 18 Census tracts that have populations qualifying as low-income and two Census tracts that have populations qualifying as minority. Siting of GNEP facilities at the PORT site would not result in disproportionately high or adverse impacts to any of these populations.

6.3.9 Transportation

The Portsmouth Reservation is served directly by road and rail. Nearby air and water transportation routes also serve the site area.

6.3.9.1 Roads

The site is 3.5 miles south of the intersection of the U.S. Route 23 and Ohio SR 32 interchange. Both routes are four lanes with U.S. Route 23 traversing north-south and Ohio SR 32 traversing east-west. Principal access to the proposed GNEP site area is by the Main Access Road (also called the West Access Road), a security-controlled access, four-lane road connecting with U.S. Route 23. The Main Access Road is closed to general public access and connects to the Perimeter Road that encircles the fenced portion of the DOE facility. Employees of the proposed GNEP facilities would utilize the Main Access Road for access from and traveling to U.S. Route 23.

Figure 6-16 Roadmap Showing Intrastate, Federal and State Highways²²

U.S. Route 23 intersects I-270, I-70, and I-71 approximately 70 miles north of the site. Trucks also may access I-64 approximately 20 miles southeast of Portsmouth. SR 32 runs east-west from Cincinnati and through Piketon to Parkersburg, West Virginia. To the west, SR 32 provides access to Cincinnati's three interstate highways, I-71, I-4, and I-75. To the east, SR 32 is linked with I-77. Refer to Figure 6-18 Roadmap Showing Intrastate, Federal and State Highways, for a graphic representation of the regional roads.

U.S. Route 23 has an average daily traffic volume of 13,990 vehicles, while Ohio SR 32 has an average daily volume of 7,420 vehicles (traffic in both directions is included in these values). U.S. Route 23 is at 60 percent of design capacity with Ohio SR 32 at 40 percent of design capacity. The Ohio Department of Transportation supplied these data from a 1999 traffic study. Load limits on these routes are controlled by the Ohio Revised Code (85,000 pounds) gross vehicle weight. Special overload permitting is available.

The DOE reservation road system is in generally good condition due to road repaving projects. The PORTS site roadways were constructed during the mid 1950s and late 1970s and are 6 inches of asphalt over a 9-inch stone base rated to handle 85,000-pounds gross vehicle weight loading. Except during shift changes, traffic levels on the site access roads and Perimeter Road are low. Peak traffic flows occur at shift changes, and the principal traffic problem areas during peak morning/afternoon traffic are at locations

where parking lot access roads meet the Perimeter Road. The site has 12 parking lots varying in capacity from approximately 50 to 800 vehicles. Total parking capacity is for approximately 4,400 vehicles.

6.3.9.2 Rail

A rail system is located on the site with several track configurations possible. Two rail carriers, CSX and Norfolk Southern, service Pike County. The Norfolk Southern rail line is connected to the CSX Transportation Inc. rail line via a rail spur entering the northern portion of the site. The onsite system is used infrequently.

Track in the vicinity of Piketon allows a maximum speed of 60 miles per hour. The CSX Transportation Inc. line also provides access to other rail carriers.

6.3.9.3 Water

The site can be served by barge transportation via the Ohio River at the ports of Wheelersburg, Portsmouth, and New Boston. The Portsmouth barge terminal bulk-materials-handling facility is available for bulk materials and heavy unit loads. All heavy unit loading is by mobile crane or barge mounted crane at an open-air terminal. The Ohio River provides barge access to the Gulf of Mexico via the Mississippi River or the Tennessee-Tombigbee Waterway. Travel time to New Orleans is 14 to 16 days; to St. Louis, seven to nine days; and to Pittsburgh, three to four days. The U.S. Army Corps of Engineers maintains the Ohio River at a minimum channel width of 800 feet and a depth of 9 feet.

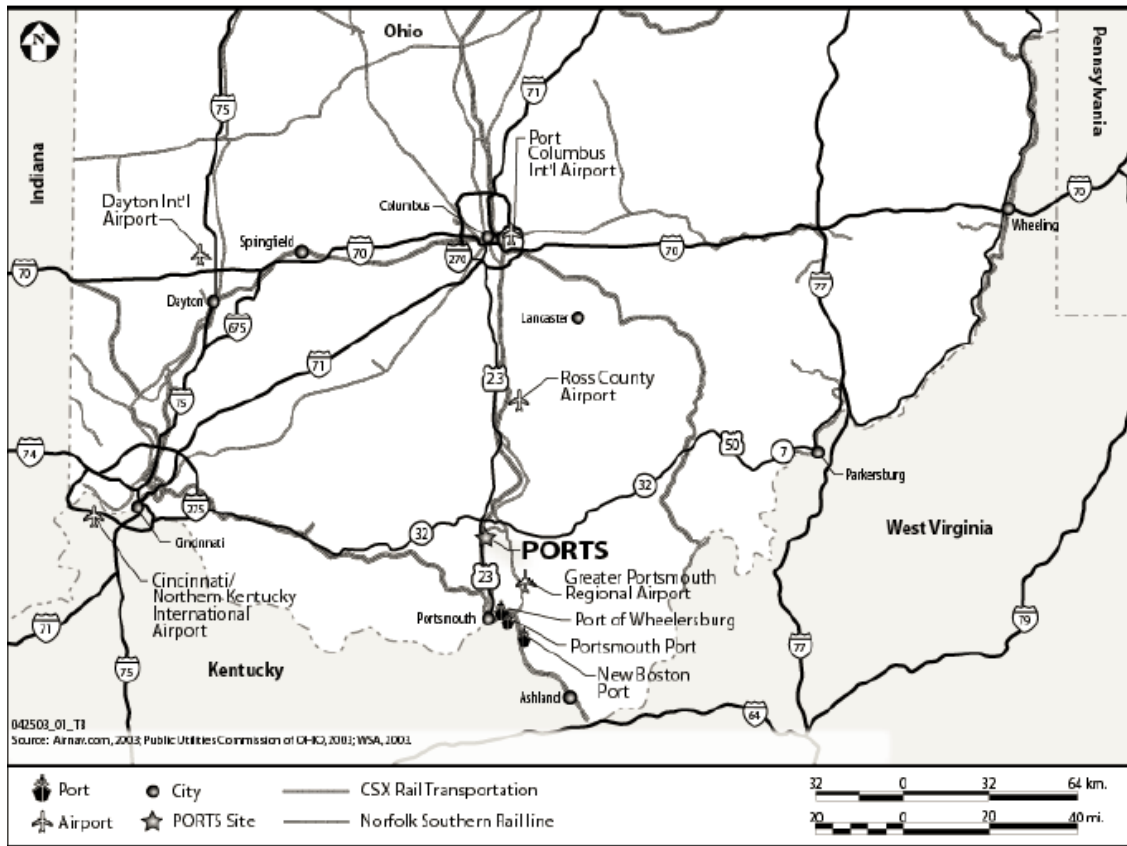
6.3.9.4 Air

The nearest airport is the Greater Portsmouth Regional Airport located approximately 15 miles south of the site. The airport has dual runways and T-hangars, and is operated by Chasteen Aviation, Inc. The airport serves mostly private aircraft owners and business travelers. There are no regularly scheduled commercial flights; however, charter service is available. Another nearby airport, the Pike County Airport, is located just north of Waverly. This facility is similar in size and makeup to the Greater Portsmouth Regional Airport.

Three international airports are within a two-hour drive of the site: Cincinnati/Northern Kentucky International Airport, Dayton International Airport, and Port Columbus International Airport.

Figure 6-17 Location of Railroads, Airports and Ports near the Proposed GNEP Site²³

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6.4 Public and Occupational Safety and Health

The Portsmouth Reservation and surrounding area have environmental media that contain radionuclides and chemicals that are both naturally occurring and from historical and current operations at the site. These media include soil, surface water, sediment, groundwater, and air. This section describes these radiological and chemical background levels from historical and current operations at the site in terms of public and occupational exposure and health. It also summarizes public health studies performed in the region of impacts to public and worker health.

6.4.1 Radiation Environment

Humans are exposed to ionizing radiation from many naturally occurring and man-made sources in the environment.²⁴ Radioactivity from naturally occurring elements in the environment is present in soil, rocks, and living organisms. Such natural radiation sources contribute approximately 300 millirems per year to the radiation dose that is received by a member of the U.S. population. The majority of this exposure, approximately 200 millirems per year, is from naturally occurring radon gas from soil, rock, and water. Man-made sources also contribute to the average amount of dose a member of the U.S. population receives. These sources include X-rays for medical purposes, 39 millirems per year, nuclear medicine 14 millirems per year, and consumer products 5 to 13 millirems per year (*e.g.*, smoke detectors). A person living in the U.S. receives a current average dose of about 360 millirems per year.

Operations at the Portsmouth site result in radiation exposures of on-site workers and members of the off-site general public. Both NRC and DOE limit the radiation exposure of the general public to less than or equal to 100 millirems per year. The maximum radiation dose to an off-site member of the public as a result of on-site facility operations is estimated to be 2.0 millirems per year, which is significantly less than the NRC or DOE dose limit for the general public and the 40 CFR Part 190 regulatory limit of 25 millirems for uranium fuel-cycle facilities. The maximum dose was estimated by conservatively using the largest environmental media concentrations monitored at different off-site locations, emission data, and conservative exposure parameters. In reality, the actual dose received by the general public would be much lower than the maximum value estimated.

Both NRC and DOE limit the occupational radiation exposure of site workers to less than 5,000 millirems per year. On-site activities that would result in occupational exposure include USEC operations at existing and the planned American Centrifuge Facility, DOE support services, and DUF6 Facility operations. According to USEC, the PORTS reservation worker average whole body dose is less 10 millirems per year. DUF6 cylinder yard worker exposure is estimated to be 64 millirems per year. Both estimates are significantly less than the NRC and DOE worker dose standards.

6.4.2 Chemical Environment

As discussed, the existing air quality on and around the site is in attainment with the criteria pollutants, PM₁₀, SO₂, NO_x, CO, O₃ and Pb, under the National Ambient Air Quality Standards and the standards adopted by the State of Ohio.

The Occupational Safety and Health Administration has issued permissible exposure limits for chemicals emitted into the air at this site (some of these limits are final, while others have only been proposed). Two of the key chemicals of concern—soluble and insoluble uranium compounds and hydrogen fluoride—are below those limits. Other chemicals have been measured over the years at various levels at the Portsmouth Gaseous Diffusion Plant. Some of these levels have approached or exceeded occupational health benchmarks. For example, arsenic levels ranged up to 2.1 milligrams per cubic meter, which is higher than the permissible exposure limit of 0.01 milligrams per cubic meter, and lead levels ranged up to 19.5 milligrams per cubic meter, which is higher than the permissible exposure limit of 0.050 milligrams per cubic meter. Several other such examples exist. The measured levels were at the upper ends of the relevant ranges and the permissible exposure limits for eight-hour time weighted averages.

Another occupational health issue is the potential risk from exposure to chemicals in the onsite subsurface soil, groundwater, and surface water. Estimates of excess lifetime cancer risks to hypothetical workers range as high as 1.5×10^{-2} , and estimates of hazard quotients for non-carcinogens range as high as eight. Note that these exposures are hypothetical and are based on unmitigated risks. Efforts are underway to mitigate these risks by site remediation.

One final issue regarding occupational health from chemicals is the potential for large quantities of hazardous material to be stored onsite for use in processing of spent nuclear fuel.

6.4.3 Occupational Injury and Illness Rates

There have been no industrial fatalities on the DOE reservation. Nevertheless, the National Institute for Occupational Safety and Health conducted an epidemiologic study at the reservation to examine the causes of death among workers employed by the facility between September 1, 1954 and December 31, 1991. Deaths among the workers were compared with rates for the general U.S. population. Possible relationships were evaluated for deaths from several types of cancer and exposures to ionizing radiation and certain chemicals (fluoride, uranium metal, and nickel). The announcement of findings by the National Institute for Occupational Safety and Health, published in October 2001, stated that overall cohort mortality was significantly less than that of the U.S. population, as was mortality from all cancers.

The lower mortality among these workers is consistent with the “healthy work effect,” which is found in most occupational epidemiologic studies. No statistically significant excesses in mortality from any specific cause were identified. Analyses of possible relationships between causes of death and the identified exposures failed to reveal any dose-response trends.

The Department of Labor has documented eight cases of beryllium sensitization and 14 cases of Chronic Beryllium Disease among current and former workers at the Portsmouth Gaseous Diffusion Plant. It has been estimated that about 1,200 of a total of 28,000 personnel (including subcontractors) who have worked at the DOE reservation have received a medical test to determine beryllium sensitivity. Likely exposure pathways are being or recently have been identified by Bechtel Jacobs Company, LLC, as authorized by DOE.

The United States Enrichment Corporation maintains a log and summary of recordable occupational injuries and illnesses under the guidance of the Occupational Safety and Health Administration’s 29 CFR Part 1910, Part 1904, *Recording & Reporting Occupational Injuries & Illnesses*. The PORTS site Recordable Injury/Illness rates per 100 full-time workers in 2002 was 2.95 and 1.94 in 2003 for an industrial classification of 2819, “Industrial Inorganic Chemicals, not elsewhere classified.” This rate was lower than the industry rate in 2002 of 3.4 Recordable Injury/Illness rate per 100 full-time workers.

6.5 Waste Management

This section describes the wastes currently generated and managed at the DOE reservation in Piketon and also describes the existing waste management practices used at the DOE reservation.

6.5.1 Current PORTS Reservation Waste Management

Wastes generated by existing PORTS Reservation operations at the DOE reservation at Piketon and/or managed onsite at the reservation include:

- Depleted uranium;
- Low-level radioactive waste;
- Non-radioactive hazardous waste;
- Low-level mixed waste;
- Recyclable waste;
- Classified/sensitive waste; and
- Sanitary/industrial waste.

The following sections summarize each of these waste streams from PORTS site activities along with the current facilities and procedures for managing these wastes.

USEC is responsible for wastes generated from ongoing operations that are leased from DOE, except for “legacy wastes,” which contain constituents such as asbestos and PCBs. The cylinder storage yards at Portsmouth currently generate only a very small amount of waste compared with the volume of waste generated from ongoing plant operations. Cylinder yard waste consists of small amounts of metal, scrapings from cylinder maintenance operations, potentially contaminated soil, and miscellaneous items.

The site has an active program to minimize the generation of solid LLW, hazardous waste, and LLMW. Radioactive waste minimization efforts include segregating radioactive waste from nonradioactive waste; reducing radiologically controlled areas, thereby reducing the volume of personal protective equipment; and improving the segregation and handling of laboratory waste. Hazardous and mixed waste minimization actions include sorting burnable waste from radioactively contaminated materials, reducing the use of absorbent cloths to clean up spills, reducing floor sweeping waste, and substituting materials containing nonhazardous components. Solid waste minimization actions include recycling corrugated cardboard, office paper, fluorescent light bulbs, batteries, and aluminum.

6.5.1.1 Wastewater

Wastewater at Portsmouth consists of nonradioactive sanitary and process-related wastewater streams, cooling water blowdown, radioactive process-related liquid effluent, discharges from groundwater treatment systems, and storm water runoff from plant areas, including runoff from the coal pile. Wastewater is processed at several on-site treatment facilities and then discharged to either the Scioto River or its immediate tributaries, including Little Beaver Creek, through several permitted outfalls. Treatment facilities include an activated sludge sewage treatment plant; several facilities that employ waste-specific pretreatment technologies (*e.g.*, pH adjustment, activated carbon adsorption, metals removal, denitrification, and ion absorption); and numerous settling basins designed to facilitate solids settling, oil collection, and chlorine dissipation. The site wastewater facilities have a capacity of approximately 5.3 million gallons per day.

6.5.1.2 Sanitary/Industrial Waste

Solid waste including sanitary refuse, cafeteria waste, industrial waste, disinfected medical waste (excluding drugs), and construction and demolition waste is collected and disposed off-site at a state-permitted sanitary landfill. The Pike County landfill is the primary endpoint for sanitary/industrial waste disposal and the Rumpke Beach Hollow landfill is an alternative destination for these wastes. The Pike County Landfill receives 1,980 tons per day and has an expected life of 34 more years. The Rumpke Beach Hollow landfill receives 264 tons per day and has an expected life of 82 more years. Disposal is in shallow trenches covered with earthen fill.

6.5.1.3 Recyclable Waste

Recyclable waste includes waste that is not: radioactively contaminated; regulated as hazardous under the Resource Conservation and Recovery Act; regulated under the Toxic Substances Control Act; categorized as classified/sensitive; and acceptable for disposal at a sanitary landfill. Examples of recyclable waste currently generated at Piketon include used oil, fluorescent bulbs, incandescent bulbs, High Intensity Discharge bulbs, circuit boards, and scrap metal. These wastes are segregated and stored onsite until off-reservation shipment to a treatment, storage, and disposal facility can be scheduled.

6.5.1.4 Classified/Sensitive Waste

Classified/sensitive waste is any waste considered as such for security reasons. These materials may be classified due to configuration, composition, contamination, or contained information. Classified waste may be categorized as non-hazardous waste or as low-level radioactive depending upon its point of and method of generation. The classified/sensitive waste is primarily classified machine parts from the American Centrifuge Plant process equipment and secondarily documents and electronic or other media containing classified/sensitive information. The machine parts may be radioactively contaminated (*i.e.*, low-level waste), but are not expected to be a hazardous waste. The documents and media are normal office waste except for the classified/sensitive information and will be disposed of as such, following destruction in accordance with each facility security program.

Classified waste is stored onsite prior to disposal in classified offsite disposal facilities. Storage and disposal will be in accordance with the waste type and characteristics.

6.5.1.5 Hazardous and Toxic Waste

Waste that is considered hazardous waste according to RCRA, or that contains PCBs defined under the Toxic Substances Control Act (TSCA), requires special handling,

storage, and disposal. The Portsmouth site generates waste, including spent solvents, heavy-metal-contaminated waste, and PCB-contaminated toxic waste. Portsmouth provides long term on-site storage for hazardous waste at two RCRA storage areas. Several additional 90-day satellite storage areas are available for temporary storage of hazardous waste. Hazardous waste is sent to off-site permitted contractors for final treatment and/or disposal.

6.5.1.6 Depleted Uranium

Approximately 195,800 tons of DUF₆ were being stored at the DOE reservation as of June 2004. The DUF₆ stored at the reservation is managed in accordance with 40 CFR Part 266 and Ohio Administrative Code 3745-266. Section 3113(a) of the USEC Privatization Act (Public Law 104-134) requires DOE to accept low-level radioactive waste, including depleted uranium that has been determined to be low-level waste, for disposal, upon the request of, and reimbursement of costs by, the United States Enrichment Corporation.

6.5.1.7 Low-Level Radioactive Waste

Low-Level Radioactive Waste (LLW) is all radioactive waste not classified as (1) high-level waste, TRU waste, spent nuclear fuel, or by-product tailings containing uranium or thorium from processed ore (as defined in Section 11(e)2 of the Atomic Energy Act of 1954, 42 U.S.C. 2011 et seq.), and (2) hazardous waste under the Resource Conservation and Recovery Act (RCRA) of 1976, 42 USC s/s 6901 et seq. LLW generated at the PORTS site is stored on site pending shipment to off-site treatment/disposal facilities. Solid LLW currently generated at the site includes refuse, sludge, and debris contaminated with radionuclides, primarily uranium and Tc-99.

Low-level radioactive wastes generated at the DOE reservation are generally transferred to the Waste Management Staging Facility for temporary storage pending shipment to offsite treatment and disposal facilities. Such waste is stored onsite until shipment to an offsite treatment, storage, and disposal facility can be scheduled. During 2003, offsite treatment, storage, and disposal facilities that managed low-level radioactive waste generated at the DOE reservation included Envirocare, Diversified Scientific Services, Inc., and GTS Duratek.

The Waste Management Staging Facility consists of a steel structure with concrete floors and is divided into three storage areas, including a 90-day hazardous waste storage area. The facility is used to accumulate, stage, and prepare hazardous waste, radioactive and hazardous mixed waste, low level radioactive waste, and non-hazardous recyclable material prior to shipment off the reservation. The facility is equipped with truck and rail loading/unloading facilities. The facility also supports nuclear measuring activities.

6.5.1.8 Mixed Low-Level Radioactive Waste

Mixed Low-Level Waste (MLLW)²⁵ is managed according to requirements established under RCRA for hazardous waste and the Atomic Energy Act of 1954 for its radioactive components. The hazardous component of MLLW is subject either to EPA regulations promulgated under RCRA or State hazardous waste regulations promulgated under RCRA. LLW that contains polychlorinated biphenyls or other hazardous components is considered to be LLMW. The current inventory of MLLW at Portsmouth is subject to RCRA land disposal restrictions. LLMW is currently stored on site pending shipment to off-site disposal facilities. For the management of MLLW, the Department has decided to treat MLLW at the Hanford Site, INEEL, ORR and SRS, and to dispose of MLLW at the Hanford Site or the Nevada Test Site.

6.5.1.9 High Level Radioactive Waste

High-level waste²⁶ is the highly radioactive waste material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and other highly radioactive material that is determined, consistent with existing law, to require permanent isolation. Unless demonstrated otherwise, all high-level waste shall be considered mixed waste and subject to the requirements of both the Atomic Energy Act of 1954 and RCRA. Treatment shall be designed and implemented in a manner that will ultimately comply with DOE/EM-0093, *Waste Acceptance Product Specifications for Vitrified High-level Waste Forms*, or DOE/RW-0351P, *Waste Acceptance System Requirements Document*, for non-vitrified, immobilized high-level waste.

Whether regulated by DOE or NRC, this waste must be immobilized and stored at the PORTS site pending shipment to off-site disposal facilities. Presently the DOE is in the process of licensing the Yucca Mountain Repository which may be licensed before GNEP facilities are operable.

6.5.2 Waste Streams from Proposed GNEP Facilities

In addition to the waste streams already generated at PORTS, the GNEP facility will generate several categories of waste: LLW; solid and liquid mixed hazardous and radiological waste (LLMW); after TRU separation wastes from the handling of this material could be considered either TRU waste and mixed TRU waste or high level waste (HLW); HLW; nonradioactive hazardous waste; and nonradioactive, nonhazardous solid waste.

6.5.2.1 Wastewater

The amount of liquid radioactively contaminated liquid effluent will depend on the facility design and waste treatment facilities.

6.5.2.2 Sanitary/Industrial Waste

Solid waste including sanitary refuse, cafeteria waste, industrial waste, disinfected medical waste (excluding drugs), and construction and demolition waste is collected and disposed off-site at a state-permitted sanitary landfill. The amount of waste is dependent on the number of personnel on-site.

6.5.2.3 Recyclable Waste

Recyclable waste includes waste that is not: radioactively contaminated; regulated as hazardous under the Resource Conservation and Recovery Act; regulated under the Toxic Substances Control Act; categorized as classified/sensitive; and acceptable for disposal at a sanitary landfill. Examples of recyclable waste currently generated at Piketon include used oil, fluorescent bulbs, incandescent bulbs, High Intensity Discharge bulbs, circuit boards, and scrap metal. These wastes are segregated and stored onsite until off-reservation shipment to a treatment, storage, and disposal facility can be scheduled.

6.5.2.4 Hazardous and Toxic Waste

Waste that is considered hazardous waste according to RCRA, or that contains PCBs defined under the Toxic Substances Control Act (TSCA), requires special handling, storage, and disposal. Hazardous waste is sent to off-site permitted contractors for final treatment and/or disposal.

6.5.2.5 Low-Level Radioactive Waste

LLW generated at the DOE reservation is generally transferred to the Waste Management Staging Facility for temporary storage pending shipment to offsite treatment and disposal facilities. Such waste is stored onsite until shipment to an offsite treatment, storage, and disposal facility can be scheduled. During 2003, offsite treatment, storage, and disposal facilities that managed low-level radioactive waste generated at the DOE reservation included Envirocare, Diversified Scientific Services, Inc., and GTS Duratek.

The Waste Management Staging Facility consists of a steel structure with concrete floors and is divided into three storage areas, including a 90-day hazardous waste storage area. The facility is used to accumulate, stage, and prepare hazardous waste, radioactive and

hazardous mixed waste, low level radioactive waste, and non-hazardous recyclable material prior to shipment off the reservation. The facility is equipped with truck and rail loading/unloading facilities. The facility also supports nuclear measuring activities.

DOE²⁷ has decided to perform minimum treatment of LLW at all sites. Minimum treatment is defined as the least amount of LLW treatment required to allow either on-site disposal or transportation to another site for disposal. Minimum LLW treatment includes basic handling, packaging, and solidification of liquid and fine particulate LLW. Therefore all sites with LLW perform at least minimum treatment on all of their LLW. In addition, the Department has decided to make the Hanford Site in Washington and the Nevada Test Site available to all DOE sites for LLW disposal. In the case of PORTS, the LLW generated by GNEP facilities will receive minimum treatment and be transported to either the Hanford Site or the Nevada Test site for possible further treatment using volume reduction methods and disposal.

If the GNEP facilities are privately owned, then the LLW will be disposed in accordance with the Midwest LLW Compact. Currently, LLW can be disposed at either the Barnwell site in South Carolina or the Envirocare site in Utah.

6.5.2.6 Mixed Low-Level Radioactive Waste

LLMW generated by GNEP facilities will be stored on site pending shipment to off-site disposal facilities. For the management of MLLW, the Department has decided to treat MLLW at the Hanford Site, INEEL, ORR and SRS, and to dispose of MLLW at the Hanford Site or the Nevada Test Site.

If the GNEP facilities are privately owned, then the MLLW will be disposed in accordance with the Midwest LLW Compact. MLLW can be disposed at the Envirocare Site in Utah.

6.5.2.7 Transuranic and Mixed Transuranic Waste

GNEP facilities will generate TRU waste incidental to operating and maintaining the CFTC and ARR. TRU waste is radioactive waste containing more than 100 nanocuries of alpha-emitting TRU isotopes per gram of waste, with half-lives greater than 20 years, except for: (1) high-level radioactive waste; (2) waste that the Secretary of Energy has determined, with the concurrence of the Administrator of the Environmental Protection Agency, does not need the degree of isolation required by the 40 CFR Part 191 disposal regulations; or (3) waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61.²⁸ No TRU waste is generated with currently at PORTS. TRU waste generated incidental to the operation and maintenance of the CFTC and ARR cannot be disposed in the Waste Isolation Pilot Project disposal facility. Refer to Section 7.1.7.12 for an explanation. When TRU waste is generated, it will be stored on site pending shipment to off-site disposal facilities.

In accordance with 10 CFR Part 61, if GNEP facilities are NRC licensed facilities, this DOE classified TRU waste would be classified as Greater than Class C waste and disposed with HLW at the currently proposed Yucca Mountain Repository.

6.5.2.8 High Level Radioactive Waste

CFTC will generate HLW resulting from the processing of SNF. Whether regulated by DOE or NRC, this waste must be immobilized and stored at the PORTS site pending shipment to off-site disposal facilities. Presently the DOE is in the process of licensing the Yucca Mountain Repository which may be licensed before GNEP facilities are operable.

7 Regulatory and Environmental Permit Requirements

This section provides a summary of major Federal statutes, Executive Orders, Federal and State regulations, and permits relevant to the siting, construction, startup, operation and decommissioning of the proposed CFTC and ARR. For each applicable law or regulation, the PORTS site was evaluated to determine whether the environmental characteristics of the two sites support successfully obtaining any necessary licenses and permits.

7.1 Federal Statutes, Executive Orders and Regulations

For the most part, the Federal statutes and Executive Orders identified in this Section apply to both the CFTC and ARR. The regulatory topics addressed are implementation of the National Environmental Policy including protection of cultural and ecological resources; use of atomic energy; environmental protection including air quality, water quality, and pollution prevention; waste management; hazardous materials packaging, transportation and storage; chemical and industrial safety; and real property management.

However, when implementing these statutes and orders with Federal regulations, the Federal regulations may differ in applicability to the CFTC and the ARR depending on ownership and whether the use of radioactive materials is regulated by NRC or DOE, refer to Section 5.2. Any differences will be identified in the facility specific regulatory sections. For those regulations that apply equally to both facilities, e.g., the environmental protection regulations of EPA or the chemical safety regulations of Occupational Safety and Health Administration (OSHA), they are identified as implementing regulations at the end of each section.

The federal statutes and regulations that apply to both the CFTC and the ARR for the various lifecycle phases are identified in this Section. Table 7-1, Major Statutes and

Executive Orders Applicable to PORTS GNEP Facilities, at the end of this section summarizes the information in this section.

7.1.1 National Environmental Policy Act, Related Acts, Executive Orders and Implementing Regulations

7.1.1.1 National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4321 et seq.

This Act requires Federal agencies to evaluate the environmental effects of a Federal undertaking including its alternatives before making a decision regarding the proposed action. In this instance, the proposed Federal action is constructing and operating the CFTC and ARR at one or more sites. There is one alternative, the no action alternative, to continue with the once-through fuel cycle and SNF storage at each reactor site.

The appropriate level of review depends on the potential to significantly affect the environment: categorical exclusion determination for actions which do not individually or cumulatively have a significant effect on the human environment, preparation of an environmental assessment when it is uncertain whether there will be significant impacts resulting from proposed action, and preparation of an environmental impact statement when the proposed action may significantly impact the quality of the human environment. The environmental impact statement should present a detailed and thorough description of each affected resource in the environment, an analysis of the environmental consequences of the proposed action, and a comparison of the alternatives. These analyses are publicly available documents.

The DOE has already issued a Notice of Intent to prepare a GNEP PEIS in accordance with its own implementing regulation in 10 CFR Part 1021, National Environmental Policy Act Implementing Procedures, which implement the Council on Environmental Quality Regulations, 40 CFR Parts 1500-1508.

Following the GNEP PEIS and Record of Decision, if the decision is made to go forward with GNEP and site both the CFTC and ARR at one site, then a site specific EIS may be needed for the specific site to address design alternatives and/or specific issues with the specific site. Depending on whether the CFTC is self-regulated by DOE or licensed by the NRC will determine the specific implementing regulations for development of the site specific EIS. If DOE self-regulates, then 10 CFR Part 1021 will be the implementing regulation; if licensed by the NRC, then the licensee is expected to prepare an Environmental Report, that can tier²⁹ from the GNEP PEIS, in compliance with 10 CFR Part 51, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions, which NRC will then use to prepare an EIS to support the agency action to license the CFTC or not.

Similarly, the ARR will be licensed by NRC in accordance with the Department of Energy Organization Act of 1977 if the DOE-owned demonstration liquid metal fast breeder reactor is operated as part of the power generation facilities of an electric utility system or when operated in any other manner to demonstrate the suitability of such a reactor for commercial application. NRC will then use the requirements of 10 CFR Part 51 to prepare an EIS to support its decision of whether to license the ARR or not.

7.1.1.2 Executive Order 11514, Protection and Enhancement of Environmental Quality (March 5, 1970)

This Order directs Federal agencies to monitor and control their activities to protect and enhance the quality of the environment. It also requires the agencies to include the public in the decision-making process for agency actions.

7.1.1.3 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994)

This Order directs federal agencies, to the extent practicable, to make the achievement of environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on Native American and/or minority and low income populations in the U.S. and its territories and possessions.

7.1.1.4 Executive Order 12114, Environmental Effects Abroad of Major Federal Actions (January 4, 1979)

This Executive Order directs responsible officials of Federal agencies to be informed of environmental considerations and to take those considerations into account when making decisions regarding on major Federal actions which could have environmental impacts anywhere outside the United States, its territories and possessions, including Antarctica. 40 CFR Parts 1500-1508, Council of Environmental Quality (CEQ) Regulations for Implementing NEPA

The CEQ has oversight of the Federal government's compliance with NEPA. The CEQ regulations implement NEPA and help public officials to make decisions that are based on an understanding of environmental consequences, and that protect, restore, and enhance the environment when action is taken. These regulations form the basis for the DOE NEPA regulation.

7.1.1.5 10 CFR Part 1021, National Environmental Policy Act Implementing Procedures

This regulation states DOE policy to follow the letter and spirit of NEPA; to comply fully with the CEQ regulations; and to apply the NEPA review process early in the planning stages for DOE proposals. The regulation establishes procedures that the DOE uses to comply with NEPA and with the CEQ regulations for implementing the procedural provisions of NEPA.

7.1.1.6 10 CFR Part 51, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions

This regulation implements NRC NEPA requirements. The intent and purpose of this regulation is the same as the CEQ regulations: implement NEPA and help NRC officials to make decisions with public input that are based on an understanding of environmental consequences, and that protect, restore, and enhance the environment when action is taken. For NRC, the NEPA review process is usually initiated by an application for a new license or certification, change to an existing license or a decommissioning plan submitted to the NRC.

7.1.2 Cultural Resources Management

Southern Ohio, where the PORTS reservation is located, contains evidence of human presence for more than 10,000 years. Archeologically, the area is best known for the Adena and Hopewell Indian mounds that date from the Woodland Period (900 B.C. to A.D. 900). During the early historic period (A.D. 1500), the Shawnee Indians had villages within the Scioto Valley, in the general area of Portsmouth. There is evidence of European presence in the region around A.D. 1550. European settlement in the region began in the late 1700s, with the first permanent Euro-American settlers arriving in Pike County in 1796.³⁰ Therefore, the following regulations and Executive Orders apply to siting of both the CFTC and ARR at PORTS. From existing information on PORTS, no National Register of Historic Places properties are located on the DOE reservation and no national landmarks are reported near the site.

7.1.2.1 American Antiquities Preservation Act of 1906, 16 USC 431-433

This Act protects historic and prehistoric ruins, monuments, and antiquities, including paleontological resources on Federal lands. If during construction, operation, and decommissioning of a GNEP facility, historic or prehistoric ruins or object are found, then DOE would have to assess the impact of the proposed action and, if found to be adverse, then the Secretary of the Interior would have to grant permission to proceed with the activity. It also provides a criminal penalty and/or imprisonment for the looting and vandalism of these sites.

7.1.2.2 National Historic Preservation Act of 1966, 16 USC 470 et seq.

In addition to NEPA requirements, this act requires Federal agencies to consult with the Advisory Council on Historic Preservation and the State Historic Preservation Office (SHPO) if any proposed action could impact a historic property resource. Federal agencies are required to establish a program to locate, identify, and nominate to the National Register of Historic Places all the historic properties under their control, including surface and subsurface resource sites.

7.1.2.3 Archeological and Historic Preservation Act of 1974, 16 USC 469-469c-2.

This Act protects, for the present and future benefit of the American people, sites of prehistoric, historic, or archaeological importance which are on public and Indian lands from Federal actions that require land modifying actions.

7.1.2.4 Archeological Resources Protection Act of 1979, 16 USC 470aa et seq.

This Act establishes new procedures for Federal agencies to issue permits for any excavation or removal of archeological resources from Federal or Indian lands and notification to Native American Tribes prior to issuance of any permit that may result in harm to Native American cultural resources on Federal lands. It also provides felony-level penalties for serious violations and civil penalties and forfeiture of vehicles and equipment for lesser violations.

7.1.2.5 Executive Order 11593, Protection and Enhancement of Cultural Environment (May 13, 1971)

This Order directs Federal agencies to establish policies that preserve, restore and maintain Federally-owned sites, structures, and objects of historical or archaeological significance. This Order was incorporated into the 1980 amendment to the National Historic Preservation Act.

7.1.2.6 American Indian Religious Freedom Act of 1978, 42 USC 1996 et seq.

This Act prevents Federal agencies from interfering with Tribal access to Native American sacred sites and traditional resources that are integral to Tribal religious practices.

7.1.2.7 Native American Graves Protection and Repatriation Act of 1990, 25 USC 3001-3013

This Act establishes the process by which Native American can request the return of human remains and other objects held by Federal agencies or within Federal-assisted museums and institutions and the process to reasonably protect Native American remains and cultural objects when they are inadvertently discovered.

7.1.2.8 Executive Order 13007, Indian Sacred Sites (May 29, 1996)

This Order directs Federal agencies to protect and preserve American Indian Tribes' religious practices by providing access to and ceremonial uses of sacred sites by Tribal religious practices where feasible and permitted by law. This Order also states that Federal agencies will maintain government-to-government relations with Tribal governments.

7.1.2.9 Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (November 9, 2000)

This Order directs Federal agencies to establish processes to ensure meaningful and timely input through consultation and collaboration with Tribal officials in the development of regulatory policies that have Tribal implications. Only one Indian tribe, the United Remnant Band of the Shawnee Nation, is present near the site in Ohio.

7.1.2.10 Implementing Federal Regulations:

36 CFR Part 60	National Register of Historic Places
36 CFR Part 63	Determinations of Eligibility for Inclusions in the National Register of Historic Places
36 CFR Part 65	National Historic Landmarks Program
36 CFR Part 800	Protection of Historic Properties
43 CFR Part 7	Protection of Archeological Resources
43 CFR Part 10	Native American Graves Protection and Repatriation Regulations

7.1.3 Ecological Resource Management

The PORTS habitat is managed grassland and upland hardwood forest. Several species of animals have been observed within the DOE reservation property boundary. The PORTS reservation is within the home range of approximately 49 mammals, 114 bird species, 11 reptile species, and six amphibian species. The aquatic habitats on PORTS

include the various holding ponds, intermittent streams, and streams that flow from or through the reservation. Previous NEPA documents have identified the potential existence of rare, threatened, and endangered species in the vicinity of PORTS; there is one federally listed endangered species and one proposed species that potentially could be found on the site, the Indiana bat and the timber rattlesnake, respectively. Surveys done in 1994 and 1996 did not find these species on the site.³¹

7.1.3.1 Migratory Bird Treaty Act of 1918, 16 USC 703 et seq.

This Act protects migratory birds that have common migratory patterns within the US, Canada, Japan, Russia, and Mexico.

7.1.3.2 Fish and Wildlife Coordination Act of 1934, 16 USC 661-667e

This Act requires Federal agencies involved with water resource development and use to consult with the Fish and Wildlife Service and state fish and wildlife agencies regarding impacts on fish and wildlife resources, and provide measures to mitigate these impacts.

7.1.3.3 Bald and Golden Eagle Protection Act of 1972, 16 USC 668-668d

The Bald and Golden Eagle Protection Act³² makes it unlawful to take, pursue, molest, or disturb both bald and golden eagles. The statute imposes criminal and civil sanctions as well as an enhanced penalty provision for subsequent offenses. Exceptions from its prohibitions on possession are the use of eagles or eagle parts for exhibition, scientific, and Indian religious uses. Bald eagles are found in most counties in Ohio.

7.1.3.4 Endangered Species Act of 1973, 16 USC 1531 et seq.

This Act requires Federal agencies to consult with the US Fish and Wildlife Service to determine whether a proposed action or project would adversely affect an endangered or threatened species. The Act also defines the process for approval, disapproval, and appeal for federal actions affecting listed species. There are 30 endangered species found in various parts of Ohio.

7.1.3.5 Farmland Protection Policy Act of 1981, 7 USC 4201, et seq.

The Act requires federal agencies to minimize their contribution to the unnecessary and irreversible conversion of agricultural land to nonagricultural uses. It also seeks to ensure that federal policies are administered in a manner that will be compatible with state, local and private policies that protect farmland. Farmland that qualifies for protection under this Act is located in Pike County, primarily along the floodplain of the Scioto River. Marginal quality farmland is located within and adjacent to the DOE reservation.

7.1.3.6 Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (January 10, 2001)

The Order directs each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement, within two years, a process to support the conservation intent of the migratory bird conventions, restore and enhance the habitat of migratory birds, as practicable, and prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds.

7.1.3.7 Executive Order 11988, Floodplain Management (May 24, 1977), and Executive Order 11990, Protection of Wetlands (May 24, 1977)

These Orders direct Federal agencies, whenever there is a reasonable alternative, to avoid any short- or long-term adverse impacts in floodplains or wetlands. Federal agency actions should minimize the destruction, loss, or degradation of wetlands.

7.1.4 Atomic Energy Act and Related Acts

The NRC and DOE derive their jurisdictional authority over government and commercial use of nuclear materials from the following statutes. Federal regulations implementing these statutes are provided in sections on each facility.

7.1.4.1 Atomic Energy Act of 1954, 42 USC §2011 et seq.

This Act is the fundamental US law on both the civilian and the military uses of nuclear materials. On the civilian side, it provides for both the development and the regulation of the uses of nuclear materials and facilities in the US, declaring the policy that "the development, use, and control of atomic energy shall be directed so as to promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise." The Act requires that civilian uses of nuclear materials and facilities be licensed, and it empowers the Atomic Energy Commission to establish by rule or order, and to enforce, such standards to govern these uses as "the Commission may deem necessary or desirable in order to protect health and safety and minimize danger to life or property." Commission action under the Act must conform to the Act's procedural requirements, which provide an opportunity for hearings and Federal judicial review in many instances.

7.1.4.2 Energy Reorganization Act of 1974, 42 USC 5801 et seq.

This Act reorganized and consolidated certain functions of the Federal government in a new Energy Research and Development Administration and in a new NRC. Under the Atomic Energy Act of 1954, a single agency, the Atomic Energy Commission, had responsibility for the development and production of nuclear weapons and for both the development and the safety regulation of the civilian uses of nuclear materials. The Act of 1974 split these functions, assigning to the Energy Research and Development Administration, now the DOE, the responsibility for the development and production of nuclear weapons, promotion of nuclear power, and other energy-related work, and assigning to the NRC the regulatory work, which does not include regulation of defense nuclear facilities.

7.1.4.3 Department of Energy Organization Act of 1977, 42 USC 7132 et seq.

The Energy Research and Development Administration became DOE under this Act. The Act directed DOE to address environment, safety and health, socioeconomics, institutional, and technology development in an integrated manner. The Act also authorized NRC to license the following specific classes of DOE facilities:

- Demonstration liquid metal fast breeder reactors when operated as part of the power generation facilities of an electric utility system or when operated in any other manner to demonstrate the suitability of such a reactor for commercial application.
- Other demonstration nuclear reactors except those in existence on the effective date of the Act when operated as part of the power generation facilities of an electric utility system or when operated in any other manner to demonstrate the suitability of such a reactor for commercial application.
- Facilities used primarily for the receipt and storage of high-level radioactive wastes resulting from activities licensed under the act.
- Retrievable surface storage facilities and other facilities authorized for long-term storage of high-level radioactive waste generated by the Energy Research and Development Administration, which are not used for, or part of, research and development activities.
- Any facility under a contract with and for the account of the Department of Energy that is utilized for the express purpose of fabricating mixed plutonium-uranium oxide nuclear reactor fuel for use in a commercial nuclear reactor licensed under such Act other than any such facility that is

utilized for research, development, demonstration, testing, or analysis purposes.

7.1.4.4 Price-Anderson Nuclear Industries Indemnity Act of 1957 and Re-authorization, 42 USC 2210

This Act was originally enacted as an amendment to the Atomic Energy Act to establish a system of financial protection for persons who may be liable for a nuclear accident or incident and for persons who may be injured. Initially, the Act covered only commercial nuclear power plants and related facilities and activities operated under license to the NRC. In 1988, the Act was re-authorized with amendments that brought nuclear activities of the DOE and DOE contractors under the liability coverage provided by Price Anderson. This re-authorization required DOE to undertake enforcement actions against indemnified contractors for violations of nuclear safety requirements.

This Act provides indemnification of private companies considering ownership or contracting, on behalf of DOE, to operate either the CFTC or ARR. The Act facilitates private ownership of either facility.

Potential Regulatory Issue 2: Since both DOE and NRC can provide Price-Anderson coverage to the facility operator, it is not clear whether a DOE-owned CFTC or ARR operated by or on behalf of DOE, if licensed by the NRC, would be covered by DOE or NRC coverage.

Potential Regulatory Solution: Congress in its authorizing legislation could amend the Price-Anderson Nuclear Industries Indemnity Act to specify either DOE or NRC coverage.

7.1.4.5 Implementing Federal Regulations:

40 CFR Part 190, Environmental Radiation Protection Standards for Nuclear Power Operations

This regulation establishes limits on the operation of nuclear fuel cycle³³ facilities so that the annual dose equivalent does not exceed 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public as the result of exposures to planned discharges of radioactive materials, radon and its daughters excepted, to the general environment from uranium fuel cycle³⁴ operations and to radiation from these operations.

This regulation would apply to the CFTC since it will reprocess spent uranium fuel; it will not apply to the ARR since it will not be a light-water-cooled nuclear power plant using uranium fuel.

7.1.5 Environmental Protection Statutes and Executive Orders

7.1.5.1 Air Quality

7.1.5.1.1 Clean Air Act of 1963, 1965, 1967, 1970, 1977 and 1990, 42 USC 7401 et seq.

The Act is a complex series of laws that govern and regulate air quality. The original Act was passed in 1963, and since that time there have been five major amendment cycles. As amended in 1977 and 1990, the statute is sweeping in scope, affecting thousands of air pollution sources across many industries as well as procurement, maintenance, and operation of motor vehicles.

The regulatory programs authorized by the Act fall into several categories or titles addressing a broad range of pollution control and abatement issues. First, all new and existing stationary sources of air pollution are subject to air quality regulation through State implementation plans. Second, new sources are subject to more stringent emission control technology and permitting requirements. Third, the Act addresses specific pollution problems, including hazardous air pollution, visibility impairment, and acid rain. There are 189 chemicals that are considered hazardous air pollutants because they are known to cause either an increase in mortality or an increase in serious irreversible or incapacitating, but reversible, illness.

The Act also created an innovative pollution reduction incentive by establishing a system of tradable pollution permits; each permit grants the owner a right to emit a certain amount of pollution. In this system, a regulatory body gives or sells a fixed number of permits equal to the total pollution target for the year. Polluters can buy and sell these permits according to their situation. Permits provide incentive for firms to reduce their pollution output by allowing them to sell unused permits.

The Act also imposes administrative penalties and criminal sanctions for negligent violations.

7.1.5.1.2 Chemical Safety Information, Site Security and Fuels Regulatory Relief Act of 1999, 42 USC 7412(r)

This Act amended Section 112(r) of the Clean Air Act to limit public access to the facility risk management plans for extremely hazardous chemicals.

7.1.5.1.3 Implementing Federal Regulations:

40 CFR Part 50	National Primary and Secondary Ambient Air Quality Standards
40 CFR Part 53	Ambient Air Monitoring Reference and Equivalent Methods
40 CFR Part 60	Standards of Performance for New Stationary Sources
40 CFR Part 61	National Emission Standards for Hazardous Air Pollutants
40 CFR Part 63	National Emission Standards for Hazardous Air Pollutants for Source Categories
40 CFR Part 68	Chemical Accident Prevention Provisions
40 CFR Part 69	Special Exemptions from Requirements of the Clean air Act
40 CFR Part 76	Acid Rain Nitrogen Oxides Emission Reduction Program

7.1.5.2 Water Quality

7.1.5.2.1 Federal Water Pollution Control Act of 1948, 1972 (Clean Water Act), 33 USC 1251 et seq.

This Act is a complex series of laws that govern and regulate waterways and improve watersheds nationwide by restoring and maintaining the chemical, physical and biological integrity of the nation's waters. Enacted originally in 1948, the Act was amended numerous times and the Act became commonly known as the Clean Water Act (CWA) after amendments were made in 1977. The Act continues to be modified and to regulate water pollution.

The CWA has five main elements: (1) a system of minimum national effluent standards for each industry, (2) water quality standards, (3) a discharge permit program that translates these standards into enforceable limits, (4) provisions for special problems such as toxic chemicals and oil spills, and (5) a revolving construction loan program for publicly-owned treatment works. All facilities that discharge wastewaters to a surface water body must comply with this Act. Facilities that directly discharge wastewaters must obtain a National Pollutant Discharge Elimination System (NPDES) permit. This permit specifies the discharge standards and monitoring and reporting requirements that the facility must achieve for each point source or outfall.

The construction and operation of either facility would require permits under this Act for storm water discharges, industrial effluents, and any dredge or fill materials into waters of the US.

7.1.5.2.2 Safe Drinking Water Act of 1974, 42 USC 300f et seq.

This Act ensures safe drinking water for Americans. With this Act, the EPA is allowed to regulate the nation's public drinking water supply by setting health-based standards for drinking water to protect against both naturally-occurring and man-made contaminants. Public drinking water supplies are supplies that provide water to more than 15 service connections or serve 25 year round residents. The Act has provisions to designate aquifers as “sole source aquifers” if they are the only source of drinking water for a region.

7.1.5.2.3 Implementing Federal Regulations:

40 CFR Part 110	Discharge of Oil
40 CFR Part 112	Oil Pollution Prevention
40 CFR Part 116	Designation of Hazardous Substances
40 CFR Part 117	Determination of Reportable Quantities for hazardous Substances
40 CFR Part 122	EPA Administered Permit programs: The National Pollutant Discharge Elimination System
40 CFR Part 125	Criteria and Standards for the National Pollutant Discharge Elimination System
40 CFR Part 129	Toxic Pollutant Effluent Standards
40 CFR Part 131	Water Quality Standards
40 CFR Part 141	National Primary Drinking Water Regulations

7.1.6 Pollution Prevention

7.1.6.1 Noise Pollution and Abatement Act of 1972 (Noise Control Act), 42 USC §4901, 4918

This Act initiated a Federal program of noise pollution regulation that was abandoned in 1981, but left a legacy of noise control regulations at the state and local level. Noise pollution is displeasing human or machine created sound that disrupts the environment.

7.1.6.2 Toxic Substances Control Act of 1976, 15 USC s/s 2601 et seq.

This Act gives EPA the ability to track industrial chemicals currently produced or imported into the United States as well as the new chemicals that are developed each year. EPA repeatedly screens these chemicals and can require reporting or testing of

those that may pose an environmental or human-health hazard. EPA can ban the manufacture and import of those chemicals that pose an unreasonable risk as necessary to protect human health and the environment.

7.1.6.3 Emergency Planning & Community Right to Know Act of 1986, 42 USC 11001 et seq.

This Act establishes requirements for Federal, State and local governments, Indian tribes, and industry regarding emergency planning and “Community Right-to-Know” reporting on hazardous and toxic chemicals. The Community Right-to-Know provisions increase the public’s knowledge and access to information on chemicals at individual facilities, their uses, and releases into the environment. States and communities, working with facilities, can use the information to improve chemical safety and protect public health and the environment. The Act addresses: emergency planning, emergency release notification, hazardous chemical storage reporting requirements, and toxic chemical inventory reporting.

7.1.6.4 Pollution Prevention Act of 1990, 42 USC 13101 et seq.

This Act established pollution prevention as a national objective and focused industry, government, and public attention on reducing the amount of pollution through cost-effective changes in production, operation, and raw materials use. Specifically, whenever feasible, pollution should be prevented or reduced at the source; source reduction includes any practice that reduces the amount of hazardous substances, pollutants, or contaminants entering any waste stream prior to recycling, treatment, or disposal. Whenever feasible, pollution that cannot be prevented should be recycled in an environmentally sound manner; and disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.

This Act, under certain conditions, requires an owner or operator to prepare and file a source reduction and recycling report on a facility-by-facility basis for certain chemicals including the quantity of the chemical entering any waste stream prior to recycling treatment or disposal; amount recycled, burned for energy recovery, and treated on-site and off-site; source reduction methods used; and methods used to identify source reduction opportunities.

7.1.6.5 Federal Insecticide, Fungicide, and Rodenticide Act of 1996, 7 USC s/s 136 et seq.

This Act provides federal control of pesticide distribution, sale, and use. All pesticides used in the U.S. must be registered (licensed) by EPA. Registration assures that

pesticides will be properly labeled and that if in accordance with specifications, will not cause unreasonable harm to the environment.

7.1.6.6 Executive Order 12088, Federal Compliance with Pollution Control Standards (October 13, 1978)

This Order directs all Federal agencies to take all necessary actions for the prevention, control, and abatement of environmental pollution at facilities under the control of the agency in accordance with the Toxic Substances Control Act, the Clean Water Act, The Safe Drinking Water Act, the Clean Air Act, the Noise Control Act, the Resource Conservation and Recovery Act, Atomic Energy Act and the Federal Insecticide, Fungicide, and Rodenticide Act. If a Federal agency is notified that it is in violation of an applicable pollution control standard, it must take the necessary steps to achieve compliance as soon as practicable.

7.1.6.7 Executive Order 12856, Right to Know Laws and Pollution Prevention Requirements (August 3, 1993)

This Order directs all Federal agencies to take all necessary actions for the prevention of pollution with respect to that agency's activities and facilities by reducing and reporting toxic chemicals entering any waste stream; improving emergency planning, response, and accident notification; encouraging the use of cleaner technologies; and researching cleaner technologies.

7.1.6.8 Executive Order 13101, Greening the Government through Waste Prevention, Recycling, and Federal Acquisition (September 14, 1998)

This Order promotes the use of recycled and environmentally preferable products and services by Federal agencies.

7.1.6.9 Executive Order 13148, Greening the Government through Leadership in Environmental Management (April 21, 2000)

This Order specifies that heads of federal agencies are responsible for integrating environmental accountability into agency day-to-day decision-making and long-term planning processes.

7.1.6.10 Implementing Federal Regulations:

40 CFR Part 110	Discharge of Oil
40 CFR Part 112	Oil Pollution Prevention
40 CFR Part 280	Technical Standards and Corrective Action requirements for Owners and Operators of Underground Storage Tanks (UST)

7.1.7 Waste Management

7.1.7.1 Solid Waste Disposal Act of 1976, 42 USC §6902

This Act regulates the management of solid waste. Solid waste is broadly defined to include any garbage, refuse, sludge, or other discarded material including solid, liquid, semisolid, or contained gaseous materials resulting from requirements and controls for transport, test procedures, and administrative requirements. Schedules include industrial, commercial, mining, or agricultural activities. Source, special nuclear or by-product material, as defined by the Atomic Energy Act (AEA), is specifically excluded as solid waste.

7.1.7.2 Resource Conservation and Recovery Act (RCRA) of 1976, 42 USC s/s 6901 et seq.

RCRA creates the framework for the proper management of hazardous and nonhazardous solid waste. It amended the Solid Waste Act of 1976. RCRA established three interrelated programs: the solid waste program to manage nonhazardous industrial and municipal solid waste, to establish criteria for solid waste landfills and other solid waste disposal facilities and banned the open dumping of solid waste; the hazardous waste program that established strict controls on the generation, transportation, treatment, storage, and disposal of hazardous waste; and the underground storage tank program to provide guidance on correct installation, leak detection, and spill, overfill, and corrosion protection for tanks containing hazardous substances and petroleum products.

RCRA was amended and strengthened by Congress in November 1984 with the passing of the Federal Hazardous and Solid Waste Amendments (HSWA). These amendments to RCRA required the phasing out land disposal of hazardous waste, provided more stringent requirements for underground storage tanks and included increased enforcement authority for EPA. RCRA has been amended on two occasions since HSWA, the Federal Facilities Compliance Act of 1992 and the Land Disposal Program Flexibility Act of 1996.

7.1.7.3 Federal Facility Compliance Act of 1992, 42 USC §6961

The Act broadens the waiver of the Government's sovereign immunity in regards to compliance with the treatment, storage and disposal of hazardous wastes at federal facilities, for example, from fines and penalties for RCRA violations at Federal facilities. It required DOE to prepare plans for developing the required treatment capacity for each site at which it stores or generates mixed waste. The state or U.S. EPA must approve each Site Treatment Plan after consultation with other affected states, consideration of public comments, and issuance of an order by the regulatory agency requiring compliance with the plan. The Act further provides that DOE will not be subject to fines and penalties for storage prohibition violations for mixed waste as long as it complies with an existing agreement, order, or permit.

7.1.7.4 Land Disposal Program Flexibility Act of 1996, 42 USC §6924

This Act amends certain sections of the RCRA. In particular, this Act makes adjustments relative to land disposal restriction provisions, and to ground water monitoring at solid waste landfill units. Specifically, de-characterized wastes are no longer prohibited from land disposal as long as they are not hazardous wastes at the point that they are land disposed. Small landfills (receiving less than 20 tons per day) will be exempted from ground water monitoring requirements if there is no evidence of ground water contamination. The Act also includes various technical corrections to RCRA.

7.1.7.5 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (Superfund), 42 USC s/s 9601 et seq.

CERCLA provides a Federal “Superfund” to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through the Act, EPA was given power to seek out those parties responsible for any release and assure their cooperation in the cleanup. Through various enforcement tools, EPA obtains private party cleanup through orders, consent decrees, and other small party settlements.

The PORTS site is not listed on the CERCLA National Priorities or Superfund List. Investigation and cleanup of hazardous substances and hazardous wastes that have been released to air, surface water, groundwater, soils, and solid waste management units as a result of past operational activities at the DOE reservation are being conducted under the provisions of RCRA, CERCLA and/or Ohio State law. Existing facilities at the site maintain permits for the storage, handling, and use of hazardous materials and effluent discharges to air and water.

7.1.7.6 Low-Level Radioactive Waste Policy Act of 1980, 42 USC 2021 et seq.

This Act specifies that Federal agencies are responsible for the disposal of LLW that is generated by their activities. This Act gave States the responsibility to dispose of low-level radioactive waste generated within their borders and allows them to form compacts to locate facilities to serve a group of States. The Act provides that the facilities be regulated by the NRC or by States that have entered into Agreements with the NRC under section 274 of the Atomic Energy Act.

7.1.7.7 Nuclear Waste Policy Act of 1982, 42 USC 10101 et seq.

This Act established both the Federal government's responsibility to provide a place for the permanent disposal of high-level radioactive waste and spent nuclear fuel, and the generators' responsibility to bear the costs of permanent disposal. Amendments to the Act have focused the Federal government's efforts, through the Department of Energy, on studying a possible site at Yucca Mountain, Nevada.

7.1.7.8 Low-Level Radioactive Waste Policy Amendments Act of 1985, 42 USC 2021b et seq.

This amendment to the Act provides States more time (until 1992) to develop facilities and to provide incentives for volume reduction of LLW. The Act also requires NRC to establish standards for determining when radionuclides are present in waste streams in sufficiently low concentrations or quantities as to be "below regulatory concern." Federally generated wastes disposed of at non-Federal facilities are subject to the same requirements as waste that is not generated at Federal facilities.

If DOE is the CFTC and ARR owner, then the LLW generated by these facilities would be disposed of by DOE either onsite or at Hanford or the Nevada Test Site.³⁵

7.1.7.9 Superfund Amendments and Reauthorization Act (SARA) of 1986, 42 USC 9601 et seq.

This Act reauthorized CERCLA to continue cleanup activities around the country. Several site-specific amendments, definitions clarifications, and technical requirements were added to the legislation, including additional enforcement authorities to facilitate administration of the complex Superfund program. Several important changes and additions to the program:

- stressed the importance of permanent remedies and innovative treatment technologies in cleaning up hazardous waste sites;
- required Superfund actions to consider the standards and requirements found in other State and Federal environmental laws and regulations;
- provided new enforcement authorities and settlement tools;
- increased State involvement in every phase of the Superfund program;
- increased the focus on human health problems posed by hazardous waste sites;
- encouraged greater citizen participation in making decisions on how sites should be cleaned up; and
- increased the size of the trust fund to \$8.5 billion.

7.1.7.10 Emergency Planning and Community Right to Know Act of 1986, 42 USC 11001-11050

This Act requires notification to local emergency planning organizations about hazardous materials that are stored at and released from sites, planned responses to unplanned hazardous releases, report requirements for hazardous and toxic substances, and provides penalties for violations of these requirements.

7.1.7.11 Low-Level Radioactive Waste Policy Amendments Act of 1989, 42 USC 2021 et seq.

This amendment to the Act requires DOE to dispose of greater than Class C LLW in a facility licensed by the NRC.

7.1.7.12 WIPP Land Withdrawal Act of 1991, P.L. 102-579, as amended by P.L. 104-201 in 1995

This Act authorized the development of the Waste Isolation Pilot Plant (WIPP) as a research and development facility located near Carlsbad, New Mexico. WIPP was established with the mission of demonstrating the safe and effective transportation, handling, and disposal of TRU wastes generated from US defense activities. WIPP is currently the only planned permanent storage facility for TRU waste. The CFTC may generate TRU waste that cannot be classified as US defense waste. At present there is no disposal facility for civilian TRU waste. NRC regulations allow for the classification of this waste as greater than Class C waste with disposal at the high-level radioactive waste disposal facility when it is licensed to accept waste.

Potential Regulatory Issue 3: The CFTC will generate TRU waste that cannot be classified as defense waste if the facility is DOE owned.

Potential Regulatory Solution: DOE may need revision to this Act to allow disposal of all DOE generated TRU waste at WIPP or may need permission to dispose of this waste as either greater than Class C LLW or as HLW.

7.1.7.13 Implementing Federal Regulations:

10 CFR Part 20	Standards for Protection Against Radiation
10 CFR Part 60	Disposal of High-Level Radioactive Wastes in Geologic Repositories
10 CFR Part 61	Licensing Requirements for Land Disposal of Radioactive Waste
10 CFR Part 63	Disposal of High-Level Radioactive Wastes in a Geologic Repository at Yucca Mountain, Nevada
40 CFR Part 191	Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes
40 CFR Part 194	Criteria for the Certification and Re-certification of the Waste Isolation Pilot Plant's Compliance with the 40 CFR Part 191 Disposal Regulations
40 CFR Part 197	Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada
40 CFR Part 260	Hazardous Waste Management System: General
40 CFR Part 261	Identification and Listing of Hazardous Waste
40 CFR Part 262	Standards Applicable to Generators of Hazardous Waste
40 CFR Part 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR Part 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR Part 265	Interim Status Standards for Owners and Operators of Hazardous Waste Management Facilities
40 CFR Part 266	Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR Part 268	Land Disposal Restrictions
40 CFR Part 270	EPA Administered Permits Programs: The Hazardous Waste Permit Program
40 CFR Part 270	Standards for Universal Waste Management
40 CFR Part 270	Standards for the Management of Used Oil
40 CFR Part 350	Trade Secrecy Claims for Emergency Planning and Community Right-to-Know Information; and Trade Secret Disclosure to Health Professionals
40 CFR Part 355	Emergency Planning and Notification
40 CFR Part 370	Hazardous Chemical Reporting: Community Right-to-Know
40 CFR Part 372	Toxic Chemical Release Reporting: Community Right-to-Know

7.1.8 Hazardous Materials Packaging, Transportation, and Storage

DOE and EPA share responsibility for transportation of hazardous wastes or radioactive and hazardous waste mixtures generated at facilities operated by DOE under the authority of the AEA. These responsibilities are delineated in accordance with the statutes identified below.

7.1.8.1 Hazardous Material Transportation Act of 1975, 49 USC 5101 et seq.

This Act is the major transportation-related statute affecting transportation of hazardous cargoes and gives the Secretary of Transportation regulatory authority for the safe transport of hazardous materials including radioactive materials in intrastate, interstate, and foreign commerce. The Act addresses material designations, packaging requirements, operational rules and enforcement. The Act also preempts state and local governmental requirements that are inconsistent with the statute, unless that requirement affords an equal or greater level of protection to the public than the HMTA requirement.

7.1.8.2 Hazardous Materials Transportation Uniform Safety Act of 1990, 49 USC 5101 et seq.

This Act was intended to clarify the maze of conflicting state, local, and federal regulations regarding the safe transport of hazardous materials in intrastate, interstate, and foreign commerce. The statute includes provisions to encourage uniformity among different state and local highway routing regulations, to develop criteria for the issuance of federal permits to motor carriers of hazardous materials, and to regulate the transport of radioactive materials.

7.1.8.3 Implementing Federal Regulations:

10 CFR Part 20	Standards for Protection Against Radiation
10 CFR Part 71	Packaging and Transportation of Radioactive Material
49 CFR Chapter I, Parts 105-180	Pipeline and Hazardous Materials Safety Administration, Department of Transportation

7.1.9 Chemical and Industrial Safety

7.1.9.1 Occupational Safety and Health Act of 1970, 29 USC 651 et seq.

This Act gives Occupational Safety and Health Administration (OSHA) the authority to prescribe and enforce standards and regulations affecting the occupational safety and health of private-sector employees such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions. However, at facilities where another federal agency has exercised its statutory authority to prescribe or enforce occupational safety and health standards, Section 4(b)(1) of the act waives OSHA jurisdiction. OSHA has recognized DOE authority under the AEA to establish and enforce occupational safety and health standards at DOE owned facilities. DOE has recently promulgated regulations to ensure worker occupational health and safety.

If either the CFTC or ARR is DOE-owned, then chemical and industrial safety will be overseen by DOE. As stated previously, with specific legislation, the MOX Fuel Fabrication Facility is regulated by Federal OSHA. If similar legislation is enacted for the GNEP facilities then the DOE-owned facilities could be regulated by Federal OSHA. A Memorandum of Understanding between OSHA and NRC allows NRC to identify any violations to the licensee for correction, if correction does not occur, then NRC will notify the regional Federal OSHA office.

If either the CFTC or ARR is a commercial facility, then it will be regulated by Ohio OSHA. NRC will also identify any violations in accordance with its Memorandum of Understanding with OSHA.

7.1.9.2 Implementing Federal Regulations:

29 CFR Part 1910	Occupational Safety and Health Standards
29 CFR Part 1926	Safety and Health Regulations for Construction
10 CFR Part 851	Worker Safety and Health Program

7.1.10 Real Property Management

The two proposed sites on the PORTS site will lease or purchase property from DOE in accordance with the following requirements, if privately owned.

7.1.10.1 Department of Energy Organization Act of 1977, 42 USC 7256

In addition to creating the DOE from ERDA (refer to Section 5.1.1.4), this Act also allowed DOE to lease excess property for up to five years with less restrictive requirements than under the AEA.

7.1.10.2 Community Environmental Response Facilitation Act of 1992, PL 102-426

This Act requires Federal agencies to identify portions of real property where no hazardous substances have been disposed of, stored, or released so that property transfers for economic redevelopment can occur.

7.1.10.3 Hall Amendment (Section 3154) to the National Defense Authorization Act of 1994, 42 USC 7256

This Act amends the Department of Energy Organization Act of 1977 to allow DOE to lease excess and unneeded property for up to ten years at DOE facilities that are to be closed or reconfigured. Provides greater certainty to tenants interested in longer-term leases.

7.1.10.4 Executive Order 12512, Federal Real Property Management (April 29, 1985)

This Order directs General Services Administration to provide government-wide policy oversight and guidance for Federal real property management.

7.1.10.5 Implementing Federal Regulations:

- | | |
|-----------------|--|
| 10 CFR Part 770 | Transfer of Real Property at Defense Nuclear Facilities for Economic Development |
| 41 CFR Part 101 | Utilization and Disposal of Real Property |

7.2 Federal Regulations and Orders Applicable to CFTC

As stated above, the Energy Reorganization Act of 1974 assigned to what is now the DOE the responsibility for the development and production of nuclear weapons, promotion of nuclear power, and other energy-related work, and assigned to the NRC the regulatory work, that does not include regulation of defense nuclear facilities. The GNEP

program is currently pursuing a partnership between DOE and private industry to develop the CFTC and ARR. Therefore, the CFTC could be a DOE-owned facility operated by or on behalf of DOE or privately owned and operated. Depending on ownership of the facility, either DOE or NRC could regulate the CFTC. In support of this preliminary siting study, this report assumes that either NRC regulations or DOE regulations and orders will apply. Even if DOE regulated, the EOI indicated that the CFTC should be licensable by the NRC so NRC requirements are identified.

In order to facilitate identification of applicable regulations, the main function of the CFTC are: SNF receipt and storage, a SNF separations facility, a fuel fabrication facility, a waste treatment (e.g., vitrification facility) and storage facility, and an interim new fuel storage facility. Refer to Figure 5-2, CFTC and ARR Diagram Showing Facility Layout, Inputs and Outputs.

7.2.1 DOE Regulations and Orders

If DOE regulates the CFTC, DOE has regulations, policy statements, orders, manuals, and guidance documents that provide both a project management and regulatory compliance framework for the design, construction, startup, operation, and deactivation and decommissioning of any facility. The goal of both the project management and regulatory compliance framework is to deliver capital assets on schedule, within budget, and fully capable of meeting mission performance and environmental, safety, and health standards. DOE uses the contracting process to impose these DOE orders, manuals, and guidance documents on the contractor.

For the CFTC, the primary DOE technical regulations that address nuclear safety, radiation protection, and worker safety and health are addressed in:

10 CFR Part 830	Nuclear Safety Management
10 CFR Part 835	Occupational Radiation Protection
10 CFR Part 851	Worker Safety and Health Program
10 CFR Part 820	Procedural Rules for DOE Nuclear Activities

There are additional regulations (e.g., requirements for a drug free workplace or NEPA implementation) that DOE has promulgated that would apply to the CFTC and these regulations are listed in 7-2, DOE Regulations Applicable to the CFTC.

DOE does not license facilities, but uses a critical decision process that is part of DOE Order 413.3A, Program and Project Management for the Acquisition of Capital Assets. Key decision points (e.g., conceptual design, during preliminary and final design, construction readiness review,) require extensive documentation and multiple reviews by multiple DOE and external reviewers before a project can move to the next phase. Startup of DOE facilities is governed by a structured process with requirements specified in DOE O 425.1C, Startup and Restart of Nuclear Facilities. Cold startup occurs after

checkout of the facility systems. During this time the contractor is preparing for his operational readiness review as they checkout cold operations of the facility. When the contractor has completed his operational readiness review process including completion of corrective actions, then the DOE conducts their operational readiness review. After the operational readiness review is completed and the corrective actions necessary for hot startup are completed, then DOE authorizes the contractor to take the facility hot.

Table 7-3, DOE Orders Applicable to the CFTC, identifies DOE orders and manuals that may be identified as contract requirements.

7.2.2 NRC Regulations

If the CFTC is licensed by the NRC, the recycling of SNF would be defined as a “production facility” under the Atomic Energy Act of 1954, as amended, and would currently require a license under the regulations in 10 CFR Part 50, Domestic Licensing of Production and Utilization Facilities, a regulation that has been used primarily to license light water reactors for the last 40 years. The design and operational safety issues associated with the CFTC would be very different from the design and operational safety issues associated with a LWR. The application of 10 CFR Part 50 to the licensing of a commercial recycling facility would present significant challenges to the applicant and to the NRC. In an NRC staff paper to the Commission,³⁶ the staff has suggested that the CFTC uses processes similar to those used in the MOX facility, which would be licensed under the 10 CFR Part 70, Domestic Licensing of Special Nuclear Material, a regulation used for plutonium processing and fuel fabrication facilities.

Since existing regulations don’t specifically address licensing the CFTC, an approach similar to that used for licensing the National Enrichment Facility, the centrifuge enrichment facility, could be used. This approach would have the NRC establish the licensing framework by identifying specific parts of existing regulations as well as new requirements that would be applied to license the CFTC. In this approach the CFTC could be licensed using regulations for the following functions:

Spent Fuel Storage – 10 CFR Part 72, *Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste*

Fuel Recycling – 10 CFR Parts 50 or 70

Fuel Fabrication – 10 CFR Part 70

Lead Test Assemblies – 10 CFR Part 50

Fuel Transport – 10 CFR Part 71, *Packaging and Transportation of Radioactive Material*

Waste Storage - 10 CFR Part 72, *Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste*

The NRC staff believes that the current 10 CFR Part 70 would provide a good framework for a new rule. NUREG-1718, *Standard Review Plan for the Review of an Application for a Mixed Oxide Fuel Fabrication Facility*, and NUREG-1520, *Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility*, would be a good basis for the development of guidance for the review of the CFTC and ensuring that the CFTC could be licensed; compliance with the requirements specified in these review plans would ensure that the facility is capable of being licensed by the NRC.

NRC has additional regulations that would apply to the CFTC (e.g., Physical Protection of Plants and Materials, Material Control and Accounting of Special Nuclear Material, and international safeguards protocols). In addition to the regulations identified in Sections 7.1.1 through 7.1.9, the regulations that implement the AEA assuming that the CFTC is licensed by the NRC, are identified in Table 7-4, NRC Regulations Applicable to the CFTC.

7.3 Federal Regulations Applicable to ARR

As stated previously, the Department of Energy Organization Act of 1977 authorized NRC to license DOE demonstration liquid metal fast breeder reactors when operated as part of the power generation facilities of an electric utility system or when operated in any other manner to demonstrate the suitability of such a reactor for commercial application, or other demonstration nuclear reactors when operated as part of the power generation facilities of an electric utility system or when operated in any other manner to demonstrate the suitability of such a reactor for commercial application.

The NRC would license the ARR³⁷ using either 10 CFR Part 50 or 10 CFR Part 52. These regulations have been developed over a period of more than 40 years and reflect the experience gained from many years of LWR design and operation. The regulations contain many provisions that are independent of reactor technology, but also contain provisions that would need to be revised based on the reactor technology. In the past, when NRC has reviewed or licensed non-LWR designs (e.g., Ft. St. Vrain or Clinch River Breeder Reactor), it was necessary for the staff to determine the applicability of the regulations to these designs and the need for exemptions and/or additional requirements to address the unique aspects of these designs. These regulatory determinations were made on a case-by-case basis and were implemented by exemptions and/or license conditions, to address those areas where the current regulations did not apply. NUREG-0800, *Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants*, would be a good basis for the development of guidance for the review of the ARR.

NRC has additional regulations that would apply to the ARR (e.g., Physical Protection of Plants and Materials, Fitness for Duty, Reporting of Defects); in addition to the regulations identified in Sections 7.1.1 through 7.1.9, the regulations that implement the

AEA based on the ARR licensed by the NRC are identified in Table 7-5, NRC Regulations Applicable to the ARR.

7.4 Applicable State of Ohio Laws and Regulations

Ohio laws and regulations are contained in the Ohio Administrative Code (OAC) that is implemented by the executive branch of the state of Ohio and in the form of Ohio Revised Code (ORC) to codify the legislation enacted by the Ohio General Assembly. The ORC identifies an executive agency, such as the director of the Ohio EPA, and require that agency to enact regulations to implement the laws established in the ORC. As such, the ORC is to the OAC as Federal Statutes are to Federal Regulations.
Ohio Laws

7.4.1 Ohio Statutes

7.4.1.1 ORC 3704, Air Pollution Control

This law directs the Ohio director of environmental protection to implement the Federal Clean Air Act program. It requires emergency action plans, the Title V permit program, the Clean Air fund, annual reporting, and imposes civil and criminal penalties. Under ORC 3753.02, there is also a requirement for all Title V permit holders to maintain a Risk Management Plan.

7.4.1.2 ORC 3734, Solid and Hazardous Waste

This law requires the Ohio director of environmental protection to establish rules and regulations for the permitting, operations, and closure of solid and hazardous waste landfills. It regulates the generation and transportation of waste including infectious waste. The law also includes provisions regarding open dumping, acid rain control, and scrap tires. Financial assurances and post closure requirements are listed.

7.4.1.3 ORC 3748, Radiation Control Program

The law appoints the department of health as the radiation control agency for Ohio. Ohio is an agreement state with the NRC. This law directs the department of health to create rules for the licensing and permitting program for all nuclear operations in the state.

7.4.1.4 ORC 3750, Emergency Planning

The law establishes a state wide emergency response commission, designates emergency planning districts, and requires facilities that generate an extremely hazardous substance above a specified threshold to submit a chemical emergency response preparedness plan for review and approval. Local exercises are required and emergency coordinators for

each district are required. The plan will include provisions for mutual aid from other districts. The law requires the plans to be updated annually.

7.4.1.5 ORC 3751, Hazardous Substances

This law requires the director of environmental protection to establish a uniform toxic chemical release program that complies with Section 313 of the “Emergency Planning and Community Right-to-Know Act of 1986.” Owners and operators of facilities that meet the reporting criteria found in ORC 3751.03(A)(1) must submit an annual report to the director providing detailed information on toxic chemical usage.

7.4.1.6 ORC 3752, Cessation of Regulated Operations

This law requires notification by any owner or operator of a facility that has received a permit from the director of environmental protection within 90 days of termination of operations of the facility. A point of contact has to be established and inspections are required. Facility access control must be established and several financial assurance requirements are contained in the code.

7.4.1.7 ORC 3781 – 3791, Building Standards

This group of laws establishes general building and construction requirements for any facility constructed in Ohio. There are specific provisions addressing electrical safety and code, fire prevention measures, sanitation requirements, and sewage system laws.
Ohio Regulations

7.4.1.8 ORC 6109 Safe Drinking Water

This law protects the public health and welfare and enables the state to assume and retain primary enforcement responsibility under the Safe Drinking Water Act. The act requires notifications and permits associated with public water usage, water advisory notifications, and several public water usage funding requirements. Specific requirements are contained for any construction, installation, or change to a public water system. It also establishes the process to license all public water system processes.

7.4.1.9 ORC 6111 Water Pollution Control

This law establishes the control to protect water within the state of Ohio. The act provides the requirements for wetlands protection including definitions, permits, mitigation banks, and enforcement. The act further establishes all permitting requirements consistent with the Federal Water Pollution Control Act. Point source and non-point source discharge permits are required and the NPDES permit system is adopted by the state. Water quality standards are established and enforcement criteria are

provided. The act also regulates injection well drilling, dredging, and sludge management

7.4.2 Ohio State Regulations

7.4.2.1 OAC 1501:18 Division of Endangered Species

This chapter complies with federal requirements for managing a program to protect endangered and threatened plant and animal species in Ohio. Recent Portsmouth site studies have not indicated the presence of any threatened or endangered plant or animal species. The potential does exist and the regulations will have to be followed during construction and operations of any facilities.

7.4.2.2 OAC 1501:21 Division of Water

This chapter requires construction permits for any dam or levee that may be required for either of the facilities. There are notification and reporting requirements once a permit is obtained.

7.4.2.3 OAC 3701:1 Radiation Control

This chapter requires the Ohio Department of Health to govern all radiation activities in Ohio. The Ohio Department of Health is an agreement state with NRC for certain inspection and licensing activities.

7.4.2.4 OAC 3701:1-50 Packaging and Transportation of Radioactive Material

This chapter establishes the regulations for packaging, preparation for shipment, and transportation of radioactive materials in the state of Ohio.

7.4.2.5 OAC 3701:1-54 Radiation Generator and Broker Reporting Requirements

This chapter requires all generators of low level radioactive waste in the state of Ohio to notify the Ohio Department of Health within 60 days of commencing the generating activity. A generation fee is required based on the volume of radioactive waste and an annual reporting requirement is also mandated. This chapter also authorizes the Department of Health to inspect any radioactive waste generating activity at any time.

7.4.2.6 OAC 3701:1-56 License for Special Nuclear Material

This chapter establishes procedures and criteria for the issuance of licenses to receive title to, own, acquire, deliver, receive, possess, use, and transfer special nuclear material in quantities less than critical mass, and establishes and provides for the terms and conditions upon which the director of the Ohio Department of Health will issue such licenses.

7.4.2.7 OAC 3745-1 Water Quality Standards

This chapter establishes minimum water quality requirements for all surface waters of the state, thereby protecting public health and welfare; and to enhance, improve and maintain water quality as provided under the laws of the state of Ohio, section 6111.041 of the Revised Code, the federal Clean Water Act, 33 U.S.C. section 1251 et seq., and rules adopted thereunder. This chapter does authorize the director of the Ohio EPA to grant temporary variances from these requires at his discretion. Specifically, this chapter identifies water quality standards for the Scioto River basin and the Little Beaver Creek which both receive runoff from the Portsmouth site.

7.4.2.8 OAC 3745-2 Attainment and Protection of Surface Water Quality Standards

This chapter provides for the attainment and protection of the surface water quality standards (WQS) established in Chapter 3745-1 of the Administrative Code. It sets forth rules for developing water quality based effluent limitations for point sources and total maximum daily loads (TMDLs) for discharges of any pollutant requiring control, including toxic, carcinogenic, and organoleptic pollutants. This chapter specifies how to determine when a wasteload allocation is necessary, how to calculate a wasteload allocation, how to determine the reasonable potential of a pollutant to cause or contribute to an excursion of the WQS, and how to develop a TMDL for a pollutant. Except as provided in paragraph (M) of rule 3745-2-12 of the Administrative Code, this chapter does not apply to establishing controls on the discharge of any pollutant by a wet weather point source.

7.4.2.9 OAC 3745-15 General Provisions on Air Pollution Control

OAC sections 3745-15 through 3745-24 outline all of the standards for air pollution control in Ohio. These regulations include particulate, sulfur dioxide, carbon monoxide, ozone, and hydrocarbon standards as well as regulations governing open burning, asbestos emissions, and nitrogen oxide standards. The air permitting process is contained in OAC 3745-31 Permit to Install New Sources of Pollution and OAC 3745-35 Air Permits to Operate and Variances. The air permitting process is consistent with federal requirements for non-source review and the general Title V program. OAC 3745-15

allows for de minimis contaminate exemptions and establishes the public nuisance requirements for any generators of air pollution in the state.

7.4.2.10 OAC 3745-27 Solid Waste and Infectious Waste Regulations

This chapter outlines the requirements for all generators of solid waste in the state of Ohio and requires certain notifications to the Ohio EPA.

7.4.2.11 OAC 3745-31 Permit to Install New Sources of Pollution

This chapter outlines all of the permit requirements for new sources of air pollution. Attainment and non-attainment areas are described, as well as permit exemptions and variances granted by the director of the Ohio EPA. The procedural permitting process is described and the requirements for permit termination are also included in this chapter.

7.4.2.12 OAC 3745-32 Section 401 Water Quality Certifications

This chapter requires a water quality certification to be obtained from the Ohio EPA when an owner or operator is applying for a permit from the army corps of engineers pursuant to section 10 of the Rivers and Harbors Act, section 404 of the Federal Water Pollution Control Act, or any federal permit or license to conduct any activity which may result in a discharge to waters of the state.

7.4.2.13 OAC 3745-33 Ohio NPDES Individual Permits

This chapter requires that no person may discharge any pollutant or cause, permit, or allow a discharge of any pollutant without applying for and obtaining an Ohio NPDES permit in accordance with the requirements of this chapter. Any person who holds a federal NPDES permit issued under Section 402 (a) of the act is not required to obtain an Ohio NPDES permit until its expiration date. The director shall administer and enforce permits issued under Section 402 (a) of the act within this state, and may modify the terms and conditions thereof, in accordance with paragraph (J) of section 6111.03 of the Revised Code.

7.4.2.14 OAC 3745-38 Ohio NPDES General Permits

This chapter requires that no person may discharge any pollutant or cause, permit, or allow a discharge of any pollutant from a point source without either applying for and obtaining an Ohio NPDES individual permit in accordance with requirements of Chapter 3745-33 of the Administrative Code, complying with the indirect discharge permit program pursuant to Chapter 3745-36 of the Administrative Code or obtaining authorization to discharge under an Ohio NPDES general permit in accordance with

requirements of this chapter. All water source discharges in Ohio are regulated by either 3745-33 or 3745-38.

7.4.2.15 OAC 3745-39 Storm Water Management Program

The purpose of the Ohio EPA storm water management program for small publicly owned or operated storm water management systems (MS4s) is to regulate sources to protect water quality and to establish a comprehensive storm water management program. In this program, small MS4s have flexibility to determine the best management practices and measurable goals that are most appropriate for their system, for each of the six minimum control measures described in paragraph (C) of rule 3745-39-03 of the Administrative Code.

Storm water runoff continues to harm Ohio's waters. Runoff from lands modified by human activities can harm surface water resources in several ways, including the changing of natural hydrologic patterns and elevating pollutant concentrations and loadings. Storm water runoff may contain or mobilize high levels of contaminants, such as sediment, suspended solids, nutrients, heavy metals, pathogens, toxins, oxygen-demanding substances and floatables.

7.4.2.16 OAC 3745-47 Procedural Rules

This chapter identified the processes for hearings, appeals, and emergency orders within the Ohio EPA.

7.4.2.17 OAC 3745-50 Hazardous Waste Management System – General

OAC sections 3745-50 through 3745-69 contain the specific regulations governing hazardous waste management in Ohio. These provisions comply with the Resource Conservation and Recovery Act of 1976 as amended. Specific sections manage the hazardous waste identification process, waste generator standards, transporter standards, and general facility requirements. The regulations for managing corrective actions in Ohio and closure, post closure, and financial requirements are outlined in OAC 3745-55.

7.4.2.18 OAC 3745-77 Title V Permits

This chapter incorporates the federal Title V air permit program into Ohio regulations.

7.4.2.19 OAC 3745-78 Air Pollution Control Fees

This chapter lists all of the fee and reporting requirements under the Title V air permit program in Ohio.

7.4.2.20 OAC 3745-100 Toxic Chemical Release Reporting

This chapter requires all owners and operators of facilities that release toxic chemical as defined by this chapter to report these chemical volumes to the Ohio EPA. The regulations govern the reporting and notifications, as well as, civil penalties for non compliance.

7.4.2.21 OAC 3745-101 Transportation Conformity

The purpose of this chapter is to implement section 176 (C) of the Clean Air Act Amendments (CAAA) in 42 USC 7401 et seq., the related requirements of 23 USC 109 (J), and regulations under 40 CFR Part 51 subpart T, with respect to the conformity of transportation plans, programs, and projects which are developed, funded, or approved by the United States department of transportation (USDOT), by the Ohio department of transportation (Ohio DOT), and by metropolitan planning organizations (MPOS) or other recipients of funds under Title 23 USC or the Federal Transit Act in 49 USC 1601 et seq. This chapter sets forth policy, criteria, and procedures for demonstrating and assuring conformity of such activities to this applicable implementation plan, developed and applicable pursuant to section 110 and Part D of the CAAA.

7.4.2.22 OAC 3745-104 Accidental Release Prevention Program

This chapter requires eligible facilities to analyze and report their worst case release scenario, complete a five year accident history, and ensure they have coordinated accident responses with local emergency response centers.

7.4.2.23 OAC 3745-270 Hazardous Wastes Restricted from Land Disposal

This chapter outlines the requirements that are consistent with the federal rules for the prohibition from land disposal of specific types of hazardous waste. The applicable treatment standards that are constituent or technology based are prescribed in the regulations.

7.4.2.24 OAC 3745-273 Management Standards for Universal Wastes

This chapter outlines the regulatory management plan for specific waste types. These wastes include batteries, pesticides, thermostats, and lamps. These regulations are consistent with the federal universal waste program.

7.4.2.25 OAC 3745-279 Used Oil Management Standards

This rule identifies those materials which are subject to regulation as used oil under Chapter 3745-279 of the Administrative Code. This rule also identifies some materials that are not subject to regulation as used oil under Chapter 3745-279 of the Administrative Code, and indicates whether these materials may be subject to regulation as hazardous waste under Chapters 3745-50 to 3745-69, 3745-205, 3745-256, 3745-266, and 3745-270 of the Administrative Code.

7.4.2.26 OAC 3750-20 Emergency Planning

The owner or operator of a facility subject to rule 3750-20-01 of the Administrative Code shall designate a facility representative who will participate in the local emergency planning process as a facility emergency coordinator. The owner or operator shall notify the committee of the facility representative within thirty days after establishment of the committee or within sixty days of the facility first being subject to regulation under rule 3750-20-01 of the Administrative Code, whichever is later.

7.4.2.27 OAC 3750-25 Emergency Release Notification

This chapter requires an owner or operator of a facility or vessel where a hazardous chemical is stored and from which a release of a hazardous substance, extremely hazardous substance, or discharge of oil into the environment has occurred in an amount equal to or exceeding the reportable quantity as set forth under rules 3750-20-50, 3750-20-30, and 3750-25-20 respectfully of the Administrative Code in any twenty-four hour period has occurred, shall provide both verbal and written notices in accordance with paragraphs (A)(1) and (A)(2) of this rule.

7.5 Consultations and Permits

In accordance with the legal requirements in Sections 5.1 and 5.2, both the CFTC and ARR will require a variety of permits, plans, licenses, and consultations that must be obtained at the appropriate phase of the GNEP project. This Section provides a list of permits relevant to the siting, construction, startup, operation and decommissioning of the proposed CFTC and ARR. For the most part, the permits identified in this Section apply to both the CFTC and ARR. There are four categories of permits for each facility: long lead-time permits, infrastructure upgrade permits, construction permits, and operating permits. Depending on ownership of the GNEP facilities (refer to Section 5.2) site-wide permits with Ohio EPA could be amended to accommodate GNEP facility requirements. Otherwise there are two types of permits: GNEP facility permits with Ohio EPA and with the PORTS site utilities where no external regulatory interface is required.

This Section identifies the needed permits based on very general facility descriptions (refer to Section 5.1) and therefore should not be considered comprehensive or binding. The design of either the CFTC or the ARR should be developed with knowledge of the existing Federal statutes, Executive Orders, Federal and Ohio regulations, and permits relevant to the siting, construction, startup, operation and decommissioning of the proposed CFTC and ARR.

The need for a permit, license, or consultation with consent, is supplemented with the following assumptions about the facilities:

- Air emissions will be controlled by various types of process controls such as glove boxes, filters, zoned ventilation systems
- Air emissions will be controlled by various non-process controls where feasible such as construction fugitive dust emissions, operational limits on diesel generator run times, use of non-ozone depleting chemicals, and administrative limits to control inventories of extremely hazardous chemicals
- Wastewater will be controlled by various process controls where feasible such as recycling of process chemicals, waste segregation
- Wastewater will be controlled by various non-process controls where feasible such as use of berms, curbs, and concrete basins
- Storm water erosion and sedimentation will be controlled by use of hay bales, silt fencing, site grading
- Drinking water will be controlled by backflow devices
- Solid waste will be controlled by segregation, prevention of cross-contamination

Table 7-6, CFTC Permits, Authorizations, Notifications or Consultations, and Table 7-7, ARR Permits, Authorizations, Notifications or Consultations, provide a list of permits, the regulating agency, and the regulatory requirement for the permit for the CFTC and ARR, respectively.

7.5.1 EIS Consultations

7.5.1.1 Cultural Resource Consultations

In accordance with the Federal laws and Executive Orders identified in Section 7.1.2, a Federal agency must consider the effects of the proposed action, constructing and operating GNEP facilities at PORTS, on properties listed on or eligible for listing on the National Register of Historic Places. The Federal agency must consult with the Advisory Council on Historic Preservation and the Ohio State Historic Preservation Officer to determine if an eligible or listed property will be impacted by the proposed action. Further, a permit is required for any excavation or removal of archaeological resources

from public or Native American lands. DOE has coordinated with the Advisory Council on Historic Preservation and the Ohio State Historic Preservation Officer regarding previous archaeological and architectural surveys of the PORTS site.

DOE has also established government-to-government consultations with Native American tribes in the area of the PORTS site to ensure that project activities protect access to, the physical integrity of, and confidentiality of traditional cultural and religious sites. No religious or sacred sites, burials sites, or resources significant to Native Americans have been identified to date at PORTS.

7.5.1.2 Ecological Resource Consultations – Endangered Species, Migratory Birds, and Golden and Bald Eagle Protection

In accordance with the Federal laws and Executive Orders identified in Section 7.1.3, a Federal agency must consult with the US Fish and Wildlife Service and the Ohio Department of Natural Resources to identify the presence of any threatened or endangered species, migratory birds, and golden or bald eagles and if present, if the proposed action would jeopardize their continued existence or result in the destruction of critical habitat of such species. Previous NEPA documents have identified the potential existence of one federally listed endangered species and one proposed species that potentially could be found on the site, the Indiana bat and the timber rattlesnake, respectively. Surveys done in 1994 and 1996 did not find these species on the site.³⁸

7.5.1.3 Farmland Protection Consultation

In accordance with the Federal laws and Executive Orders identified in Section 7.1.3.5, a Federal agency should minimize their contribution to the unnecessary and irreversible conversion of agricultural land to nonagricultural uses. Since the proposed sites are on the PORTS site, there is no change in farmland use.

7.5.2 Air Quality Permits

This section addresses the permits and plans associated with gaseous effluent releases to the atmosphere.

7.5.2.1 Emissions from Construction Vehicles and Worker Automobiles

Emissions from construction vehicles and worker automobiles are considered mobile sources that are subject to manufacturer requirements, so no permit is needed. Fugitive dust emission control measures should be addressed in a Construction Fugitive Emissions Control Plan.

7.5.2.2 Pollutant Emissions from Space Heating

No permit is needed for criteria pollutant emissions from space heating of CFTC and ARR facilities.

7.5.2.3 Title V Air Operating Permit

A Title V Operating Permit is required for sources that are not exempt and are major sources. It is also required for sources subject to the Acid Rain Program, New Source Performance Standards, or to the National Emission Standard for Hazardous Air Pollutants (NESHAPs). Regulated pollutants include carbon monoxide (CO), particulate matter (PM), volatile organic compounds (VOCs), sulfur oxides (SO_x), nitrogen oxides (NO_x), lead (Pb), and hazardous air pollutants (HAPs). A major source has the potential to emit:

- 100 tons per year or more of any pollutant,
- 25 tons per year or more of either VOCs or NO_x,
- 10 tons per year or more of a single HAP, or
- 25 tons per year or more of a combination of HAPs.

Neither the CFTC nor ARR is likely to be an affected source subject to the Acid Rain Program and to the New Source Performance Standards.

The CFTC has the potential to emit NO_x from the recycling process, the gas storage area, and chemical reagents facility; VOCs from the recycling process, emergency and standby diesel generators, diesel generator fuel storage tanks, maintenance degreasing facilities, and the chemical reagents facility; CO from the sintering processes in fuel fabrication and diesel generators; HAPs from the recycling process and maintenance activities such as painting and degreasing equipment; and minimal quantities of radionuclides. Emissions from the facility should be limited by emission control devices such as venturi scrubbers, diesel generator run times, and high efficiency particulate filters.

The ARR has the potential to emit VOCs from the emergency and standby diesel generators, diesel generator fuel storage tanks, and maintenance degreasing facilities; CO from the diesel generators; HAPs from maintenance activities such as painting and degreasing equipment; and minimal quantities of radionuclides. Emissions from the facility should be significantly less than 20% of the major source quantities and exempt from regulation.

7.5.2.4 Radionuclide NESHAPs

If the CFTC and ARR are licensed by the NRC, then releases are exempt from NESHAPs in accordance with 40 CFR Part 61, Subpart I.^{39,40} DOE facilities are subject to 40 CFR Part 61, Subpart H.

Potential Regulatory Issue 4: If the CFTC and ARR are DOE-owned, then there is the potential for both 40 CFR Part 61 Subparts H and I to apply to these facilities. This results in dual regulation.

Potential Regulatory Solution: Congress in its authorizing legislation could specify that, if the facilities are licensed by the NRC and DOE-owned, then 10 CFR Part 61 Subpart I would apply to facility radionuclide emissions. Or EPA could be asked to revise their regulations

Facilities covered by Subpart H may be exempted from applying to the US EPA regional office for approval to construct or modify a facility (PORTS site) if the most recent annual report shows that PORTS is in compliance with the 10 mrem per year effective dose equivalent standard for this source category and the owner or operator can show that each one of the new facilities would result in an effective dose equivalent of less than 0.1 mrem per year as demonstrated using EPA approved methodology. It is unlikely that the CFTC or ARR facility emissions would be exempted from NESHAPS.

Therefore, if DOE-owned and subject to Subpart H, then the CFTC and ARR would need to develop a bounding emission rate for each facility, and using an EPA approved methodology such as the CAP-88PC computer code calculate the normal release impacts of each facility. The methodology and assumptions as well as the outcome should be submitted to the regional EPA office and the Ohio EPA for review and approval to construct the facilities and begin long-lead procurement of facility components.

7.5.2.5 Air Quality Permit to Operate

An Air Quality Permit to Operate is required for any source that is subject to Prevention of Significant Deterioration, nonattainment areas, New Source Performance Standards, NESHAPS, and state requirements for the Permit to Operate and/or registration of an operating unit with potential air emissions of an amount and type considered minimal.

If a facility requires a Title V air permit, then a Permit to Operate is not needed. Since the CFTC is likely to require a Title V permit, then a Permit to Operate is not required.

For the ARR, a Permit to Operate is needed since NESHAPS does apply in accordance with OAC 3745-35-02.

On March 13, 2007, Ohio EPA completed draft language of rules for the new Permit-to-install and operate (PTIO) program. Future permitting may be simplified by proposed amendments to Ohio Administrative Code (OAC) Rule 3745-15-03, Submission of Emission Information, that will condense two separate permitting processes, the Permit-to-install and -operate (PTIO) programs into one.

7.5.2.6 Air Quality Permit to Install

Prior to the installation of any new air contaminant emissions unit, a Permit to Install must be applied for and issued as directed by OAC 3745-31-29. The Ohio EPA defines a new emissions unit as any unit where construction commenced after January 1, 1974. Only after the Permit to Install is issued may a facility begin installation and construction of the emissions unit. An emissions unit could be exempt from a Permit to Install if the unit is listed in accordance with OAC 3745-31-03 or is a de minimis unit. A de minimis unit emits 10 pounds of any criteria pollutant per 24 hour period, without the use of air emission control equipment, and emits less than 1 ton per year of any HAPs at maximum design operating conditions. It is likely that the CFTC or ARR would not be exempted or a de minimis unit.

Therefore a Permit to Install will be required for each facility for facility discharge, diesel generators, and diesel fuel tanks.

It may be advantageous to have a concrete batch plant on-site at PORTS to provide nuclear grade concrete for both the CFTC and ARR. If so, then a Permit to Install General Permit will be needed for the concrete batch plant as well.

On March 13, 2007, Ohio EPA completed draft language of rules for the new Permit-to-Install and Operate (PTIO) program. Future permitting may be simplified by proposed amendments to Ohio Administrative Code (OAC) Rule 3745-15-03, Submission of emission information, that will condense two separate permitting processes, the Permit-to-Install and -Operate (PTIO) programs into one.

7.5.2.7 Risk Management Plan

Facilities that use chemicals in their processes that are listed as regulated toxic and flammable substances under Section 112(r)(3), (4), and (5) of the Clean Air Act must file a Risk Management Plan as prescribed in 40 CFR 68 (OAC 3745-104-43) to identify the hazards, steps to prevent releases and preparations to mitigate any actual releases. Tables of toxic substances and flammable substances as well as their threshold quantities (i.e., 10,000 pounds) for accidental release prevention are provided in 40 CFR §68.130.

It is likely that the CFTC will contain chemicals in quantities that will require the development of a Risk Management Plan.

7.5.2.8 Clean Air Act Conformity Determination

A conformity determination is required for each criteria pollutant (CO, PM, VOCs, SO_x, NO_x, Pb, and HAPs) where the total direct and indirect emissions in a nonattainment or maintenance area caused by federal action would equal or exceed threshold rates. If the

CFTC and ARR are DOE-owned facilities, then a conformity determination is required if direct and indirect emissions equal or exceed the threshold rates. Since Pike County, Ohio, is designated as a Cannot be Classified or Better than Standard for all criteria pollutants and contains no maintenance areas, no Clean Air Act Conformity Determination is required for either facility.

7.5.2.9 Construction Fugitive Emissions Control Plan

Heavy construction is a source of dust emissions that may have substantial temporary impact on local air quality. Dust emissions often vary substantially from day to day, depending on the level of activity, the specific operations, and the prevailing meteorological conditions. A large portion of the emissions results from equipment traffic over temporary roads at the construction site. A Construction Fugitive Emissions Control Plan⁴¹ is needed to identify the measures to be taken to minimize fugitive particulate matter that becomes airborne during construction activities (OAC 3745-17-08). The measures to be taken include watering of unpaved surfaces, chemical stabilization of potential dust sources, use of wind screens or fences, planting vegetative covers, and using enclosures for material storage and transport.

7.5.2.10 Open Burning

Should open burning be required during site clearing and grading activities, it should be conducted within the requirements of OAC 3745-19 that require a permit application at least 10 working days before the burn is initiated. The permit should address the purpose of the proposed burning, the quantity of material to be burned, the date or dates when the burn will be occur, location of the burn site including pertinent information on residences and populated areas, and methods to reduce air contaminant emissions.

7.5.2.11 Gas Storage

An environmental permit is not needed for bulk storage of gases used in CFTC processing.

7.5.3 Surface Water Protection Permits and Plans

This section addresses the permits and plans associated with effluent releases to surface water.

7.5.3.1 National Pollutant Discharge Elimination System (NPDES) Permits

A National Pollutant Discharge Elimination System (NPDES) permit is required from the Ohio EPA Division of Surface Water to discharge wastewater to a water of Ohio. An NPDES permit limits the quantity of pollutants in wastewater discharges and establishes other compliance requirements, such as monitoring, record keeping and operating conditions. The conditions of the permits help protect public health and the aquatic environment by ensuring compliance with Ohio's water quality standards and federal regulations. There are several waste streams that are produced by the CFTC and ARR that may involve NPDES permitting: storm water, condensate from heating and ventilation units, sanitary wastewater, low-level radioactively contaminated wastewater, excess condensate from steam generation, and uncontaminated groundwater.

7.5.3.2 Construction Storm Water Permit, Notice of Intent and Storm Water Pollution Prevention Plan

A construction storm water discharge permit is needed before any soil disturbance of greater than one acre such as clearing, grubbing, grading or placement of fill or excavating, can begin on the CFTC and ARR site. Ohio has a general NPDES Permit for Storm Water Discharges in Ohio, OEPA Permit OHC000002, which covers storm-water discharges during construction, including storm-water discharges from an on-site concrete batch plant if installed that should apply to CFTC and ARR site. Use of this permit requires submittal of a Notice of Intent to discharge under Permit OHC000002 and a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP identifies controls to use for erosion, sediment and storm water management, dewatering, and a description of the procedures to ensure the timely maintenance of vegetation, erosion and sediment control, and associated calculations.

7.5.3.3 Industrial Facility Storm Water Permit, Notice of Intent, and Storm Water Pollution Prevention Plan

An industrial storm water discharge permit is needed from Ohio EPA for storm water that will be discharged from the site during operations unless an existing NPDES permitted outfall on the PORTS site can be used. The existing permitted outfalls are covered by United States Enrichment Corporation NPDES permit for the PORTS site. If an existing permitted outfall cannot be used, then an application for a major individual NPDES permit will be required with submittal of a Notice of Intent to discharge and a Storm Water Pollution Prevention Plan (SWPPP).

7.5.3.4 Ohio Surface Water Permit to Install

Prior to the installation of any new any wastewater treatment system, collection system or disposal facility, a Permit to Install (PTI) must be applied for and issued as directed by OAC 3745-31-02. The PTI requirements also apply to the installation or modification of an on-site sewage treatment system and to the land application of sewage sludge. This PTI would need to address tie-in to the existing sanitary waste treatment system covered in permits held by the United States Enrichment Corporation or a permit to install a separate sanitary waste treatment system. A PTI is required before constructing any waste water collection and treatment systems.

7.5.3.5 Antidegradation Review of PTI or NPDES Permits

A permit application (PTI or NPDES) that increases the quantity of pollutants discharged to a receiving stream may require an antidegradation review by Ohio EPA for new discharges as well as facility expansions. Ohio EPA does a cost-benefit evaluation of the change in water quality of the receiving stream due to the new or increased discharge. Under the antidegradation review process, the applicant identifies the changes in effluent discharges, identifies the social, economic, and environmental benefits and costs of the project to the public, and evaluates alternatives that would reduce the total quantity of pollutants to be discharged.

7.5.3.6 Clean Water Act Section 404 (Dredge and Fill) Permit

Section 404 of the Clean Water Act requires a permit to place dredged or fill material into waters of the US, including wetlands; specific activities that will have minimal environmental impacts may be authorized by the Corps under nationwide permits. If specific activities are authorized by a nationwide permit or a regional permit, then a notice must be filed if a nationwide or regional permit applies. It is unlikely that construction of the CFTC and ARR would result in the dredging or placement of fill material into wetlands within the jurisdiction of the US Army Corps of Engineers. If, however, construction activities will impact waters of the US, the activities may be covered either by a US Army Corps of Engineers Nationwide Clean Water Act Section 404 permit with a required preconstruction notice or by an application for an individual permit.

7.5.3.7 Ohio Wetlands Permits

Although there are approximately 20 acres of wetlands on the PORTS site, it is not believed that GNEP facility construction would impact these wetlands by dredging or placement of fill material.

7.5.3.8 Clean Water Act Section 401 Certification

Section 401 of the Clean Water Act requires state agencies to evaluate projects that will result in the discharge of dredged or fill material into waters of the US to determine whether the discharge will violate water quality standards. Section 401 certification (OAC 3745-32, OAC 3745-1-01 through 32, and OAC 3745-1-50 through 54) may not be granted for projects that will violate the state's water quality standards. A Section 401 certification is required for activities that require federal permits such as a Section 404 permit unless the project meets the applicable conditions for a nationwide permit.

7.5.3.9 Isolated Wetland Permit

In a 2001 decision, the US Supreme Court ruled that the US Army Corps of Engineers did not have the authority to regulate isolated wetlands under Section 404 of the Clean Water Act (CWA). Following that court decision, the Ohio legislature gave Ohio EPA authority to issue permits for activities in isolated wetlands. Any person who wishes to place dredged or fill material into isolated wetlands must apply for and receive an isolated wetland permit from Ohio EPA in accordance with OAC Rule 3745-45-02 and 3745-1-54. The application review process has three levels, depending on the type and size of wetlands⁴² that will be disturbed by dredging or placement of fill material:

1. For a proposal to fill a category 1 or a category 2 isolated wetland (less than or equal to one-half acre), a general state isolated wetland permit is required; this permit includes submission of a pre-activity notice requiring a level one review.
2. For a proposal to fill a category 1 isolated wetland (greater than one-half acre) or a category 2 isolated wetland (greater than one-half acre but less than three acres), a general state isolated wetland permit is required; this permit includes submission of a pre-activity notice requiring a level two review including public hearing.
3. For a proposal to fill a category 2 isolated wetland (greater than three acres) or a category 3 isolated wetland, an individual state isolated wetland permit is required; this permit is subject to level three review including public hearing.

As stated previously, it is not believed that the GNEP facilities will impact any wetlands, however, if more detailed study should indicate that wetlands will be impacted, then the appropriate permit would need to be submitted to Ohio EPA.

7.5.3.10 Spill Prevention Control and Countermeasures (SPCC) Plan

An SPCC is required by 40 CFR Part 112 for any facility that could discharge oil in harmful quantities into navigable waters or onto adjoining shorelines. It is unlikely that an SPCC will be needed during construction of the CFTC and ARR. It is likely that an

SPCC will be needed for operation to address the diesel oil inventory that will support standby and emergency diesel generators for both the CFTC and ARR.

7.5.3.11 Domestic Water Distribution and Sanitary Waste Treatment

It is assumed that domestic water and sanitary waste treatment will be provided by existing PORTS facilities.

7.5.4 Waste Management and Pollution Prevention

7.5.4.1 Waste Minimization and Pollution Prevention Plan

A Waste Minimization and Pollution Prevention Plan is required to meet RCRA waste minimization criteria for the non-hazardous solid waste, hazardous waste, and the hazardous portion of mixed LLW and TRU waste. Both the CFTC and the ARR will develop Waste Minimization and Pollution Prevention Plans.

7.5.4.2 Hazardous Waste

7.5.4.2.1 Hazardous Waste Identification

In accordance with OAC 3745-51-01, generators of hazardous waste must notify either Ohio EPA or US EPA if they generate hazardous waste as identified in OAC 3745-51. This rule applies to waste generated in Ohio as well as waste generated outside the state but managed in the state.

7.5.4.2.2 Registration and Hazardous Waste Generator Identification Number

A hazardous waste generator who generates over 220 pounds per calendar month of hazardous waste, in accordance with OAC 3745-52-12 and 3745-54-11, must not treat, store, dispose of, transport, or offer for transportation hazardous waste without having received a generator US EPA identification number from US EPA or Ohio EPA.

7.5.4.2.3 Hazardous Waste Treatment, Storage, or Disposal Facility Permit

Facilities involved in the treatment, storage, or disposal of hazardous waste must obtain a hazardous waste facility permit from Ohio EPA in accordance with OAC 3745-50-40 through 3745-50-44 and OAC 3745-50-62. Treatment, storage, or disposal of hazardous waste means nonexempt treatment by the generator of hazardous and mixed waste [radioactive and hazardous waste], storage by the generator on-site for more than 90 days of 2,205 pounds or more of hazardous waste per month, storage by the generator on-site for more than 180 days of between 220 and 2,205 pounds of hazardous waste per month, disposed of on site, or be received from off-site for treatment or disposal.

Owners and operators of facilities who wish to begin managing hazardous waste for the first time must receive a RCRA permit before the facility is allowed to treat, store, or

dispose of hazardous waste. Owners and operators of new hazardous waste facilities must submit Parts A and B of the permit application at least 180 days before physical construction of the facility is expected to commence. However, it may take several years for the Ohio EPA to issue the permit. Owners and operators should apply for a permit early in their planning process because physical construction cannot commence until the permit is issued. The Ohio EPA has integrated public involvement in all stages of the permitting process, including pre-application meeting, public comment and response periods, and public hearings.

All RCRA permits require some form of financial assurance for closure and post-closure activities to ensure there will be funds available to clean up the facility. This information is based on the specific size and activities of the permitted facility and is determined during the permitting process.

The CFTC will need a permit for storage and treatment of hazardous and mixed waste prior to off-site disposal. DOE currently has a RCRA Part B permit for storage at the PORTS site. Depending on the final determination of ownership regarding the GNEP facilities, it may be possible to modify the current RCRA Part B permit to include CFTC activities. This may reduce some of the formal steps to obtaining a new RCRA Part B permit.

It is uncertain if the ARR will need a permit for storage and treatment prior to off-site disposal of hazardous and mixed waste.

7.5.4.3 Solid Waste

7.5.4.3.1 Construction and Demolition Debris Facility License

In accordance with OAC 3745-37-01, a license is required before establishing, modifying, operating, or maintaining a facility to dispose of debris from the construction, destruction, alteration, or repair of man-made physical structures. The debris cannot qualify as solid or hazardous waste with the exception of solid waste that is packaging resulting from the use of construction materials where the packaging is incidental to the load; tree stumps, trunks and branches exceeding four inches in diameter where the branches are clean of leaves and smaller branches; and asbestos-containing materials only if a NESHAPS air permit has been issued to the facility. It is possible that a construction landfill could be in place at PORTS during construction of the CFTC and ARR.

7.5.4.3.2 Industrial Solid Waste Landfill Permit to Install

A permit to install is required before constructing or expanding a solid waste landfill facility in Ohio. It is unlikely that a solid waste landfill will be developed to support the CFTC and ARR.

7.5.4.4 Underground Storage Tanks (USTs)

7.5.4.4.1 Underground Storage Tanks (UST) Permit

In accordance with 40 CFR Part 280 and OAC 1301:7-9-06, a permit is required to install, remove, close-in-place, take out of service for more than 90 days, perform a change in service, perform a major repair that has caused a release, or perform a modification of an UST system or component. Underground storage tank means one or any combination of tanks, including the underground pipes connected thereto, that are used to contain an accumulation of regulated substances the volume of which, including the volume of the underground pipes connected thereto, is 10 per cent or more beneath the surface of the ground. Regulated substances include petroleum products or substances defined as hazardous by CERCLA, except those defined as hazardous waste by RCRA.

Diesel generator fuel storage tanks for both the CFTC and ARR would qualify as USTs and require a permit to install.

7.5.4.4.2 Underground Storage Tanks (UST) Registration

Any owner who installs an UST system shall, within thirty days of bringing such UST system into service, submit the applicable new UST system installation application for registration to the fire marshal for each location where the UST system is installed.

Diesel generator fuel storage tanks for both the CFTC and ARR would need to be registered. Depending on ownership, DOE-owned, a modification to the existing PORTS UST registration could be made.

7.5.4.5 PCB Waste Activity

In accordance with the Toxic Substances Control Act, 40 CFR Part 761, if either the CFTC or ARR would generate polychlorinated biphenyls (PCBs) then the facilities would be required to notify EPA.

7.5.4.6 Emergency Planning and Response

7.5.4.6.1 Material Safety Data Sheets (MSDS)

In accordance with 29 CFR Part 1910, 40 CFR Part 370, and OAC 3750-30-15, submission of a list of MSDSs is required for hazardous chemicals that are stored on site in excess of their threshold quantities. Both the CFTC and ARR will submit appropriate MSDSs to the Ohio State Emergency Response Commission.

7.5.4.6.2 Annual Hazardous Chemical Inventory Report

Annually, in accordance with 40 CFR Part 370 and OAC 3750-30-01, either separately or in conjunction with the other DOE tenants at the PORTS site, an Annual Hazardous Chemical Inventory Report must be submitted each year to the Ohio State Emergency Response Commission.

7.5.4.6.3 Notification of On-site Storage of an Extremely Hazardous Substance

Within 60 days of commencing on-site storage of an extremely hazardous substance in a quantity greater than the threshold planning quantity, the Ohio State Emergency Response Commission must be notified of such on-site storage in accordance with 40 CFR Part 355 and OAC 3750-20-05.

7.5.5 Site Use Permits

The PORTS site does not have a formal process for authorizing tie-in or work on site such as: Site Utilization, Site Clearance, Excavation, and Underground Piping Permits, Power Services Utilization Permit, And Work Clearance Permits.

Table 7-1 Major Statutes and Executive Orders Applicable to PORTS GNEP Facilities

Statutes and Executive Orders	Applicability	Category	Specific Requirements
National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4321 et Seq.	Federal agencies	NEPA	Every proposal for a major Federal action, such as constructing and operating the CFTC and ARR, significantly affecting the quality of the human environment requires a detailed statement on, among other things, the environmental impact of the proposed action and alternatives to the proposed action. The statement is to accompany the proposal through the agency review process.
Executive Order 11514, Protection and Enhancement of Environmental Quality (March 5, 1970)	Federal agencies	NEPA	Directs Federal agencies to monitor and control their activities to protect and enhance the quality of the environment. It also requires the agencies to include the public in the decision-making process for agency actions.
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994)	Federal agencies	NEPA	Directs federal agencies, to the extent practicable, to make the achievement of environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on Native American and/or minority and low income populations in the U.S. and its territories and possessions.
Executive Order 12114, Environmental Effects Abroad of Major Federal Actions (January 4, 1979)	Federal agencies	NEPA	Directs responsible officials of Federal agencies to be informed of environmental considerations and to take those considerations into account when making decisions regarding on major Federal actions which could have environmental impacts anywhere outside the United States, its territories and possessions, including Antarctica.

Statutes and Executive Orders	Applicability	Category	Specific Requirements
American Antiquities Preservation Act of 1906, 16 USC §§431-433	Federal agencies	Cultural Resource Management	Protects historic and prehistoric ruins, monuments, and antiquities, including paleontological resources on Federal lands. It also provides a criminal penalty and/or imprisonment for the looting and vandalism of these sites.
National Historic Preservation Act of 1966, 16 USC 470 et seq.	Federal agencies	Cultural Resource Management	Requires consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Office (SHPO) if any proposed action could impact a historic property resource. Federal agencies are required to establish a program to locate, identify, and nominate to the National Register of Historic Places all the historic properties under their control, including surface and subsurface resource sites. Portions of act may be waived for reasons of national security.
Archeological and Historic Preservation Act of 1974 (16 U.S.C. 470aa et seq.)	Federal agencies	Cultural Resource Management	Protects, for the present and future benefit of the American people, sites of prehistoric, historic, or archeologic importance which are on public and Indian lands from Federal actions that require land modifying actions.
Archeological Resources Protection Act of 1979 (16 U.S.C. 470aa et seq.)	Federal agencies	Cultural Resource Management	Establishes new procedures for Federal agencies to issue permits for any excavation or removal of archeological resources from Federal or Indian lands and notification to Native American Tribes prior to issuance of any permit that may result in harm to Native American cultural resources on Federal lands. It also provides felony-level penalties for serious violations and civil penalties and forfeiture of vehicles and equipment for lesser violations.
American Indian Religious Freedom Act of 1978 (42	Federal agencies	Cultural Resource Management	Prevents Federal agencies from interfering with Tribal access to Native American sacred sites and traditional

Statutes and Executive Orders	Applicability	Category	Specific Requirements
USC 1996 et seq.)			resources that are integral to Tribal religious practices.
Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001-3013)	Federal agencies	Cultural Resource Management	Establishes the process by which Native American can request the return of human remains and other objects held by Federal agencies or within Federal-assisted museums and institutions and the process to reasonably protect Native American remains and cultural objects when they are inadvertently discovered.
Executive Order 11593, Protection and Enhancement of Cultural Environment (May 13, 1971)	Federal agencies	Cultural Resource Management	Directs Federal agencies to establish policies to preserve, restore and maintain Federally-owned sites, structures, and objects of historical or archeological significance.
Executive Order 13007, Indian Sacred Sites (May 29, 1996)	Federal agencies	Cultural Resource Management	Directs Federal agencies to protect and preserve American Indian Tribes' religious practices by providing access to and ceremonial uses of sacred sites by Tribal religious practices where feasible and permitted by law. This Order also states that Federal agencies will maintain government-to-government relations with Tribal governments.
Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (November 9, 2000)	Federal agencies	Cultural Resource Management	Directs Federal agencies to establish processes to ensure meaningful and timely input through consultation and collaboration with Tribal officials in the development of regulatory policies that have Tribal implications.
Migratory Bird Treaty Act of 1918, 16 USC 703 et seq.	All	Environmental Resource Management	Protects migratory birds that have common migratory patterns within the US, Canada, Japan, Russia, and Mexico.
Bald and Golden Eagle Protection	All	Environmental Resource	Makes it unlawful to take, pursue, molest, or disturb both bald and golden

Statutes and Executive Orders	Applicability	Category	Specific Requirements
Act of 1972, 16 USC 668-668d		Management	eagles. The statute imposes criminal and civil sanctions as well as an enhanced penalty provision for subsequent offenses. Exceptions from its prohibitions on possession are the use of eagles or eagle parts for exhibition, scientific, and Indian religious uses.
Endangered Species Act of 1973, 16 USC 1531 et seq.	Federal agencies	Environmental Resource Management	Requires Federal agencies to consult with the US Fish and Wildlife Service to determine whether a proposed action or project would adversely affect an endangered or threatened species. The Act also defines the process for approval, disapproval, and appeal for federal actions affecting listed species.
Farmland Protection Policy Act of 1981, 7 U.S.C. 4201, et seq.	Federal agencies	Environmental Resource Management	Requires Federal agencies to minimize their contribution to the unnecessary and irreversible conversion of agricultural land to nonagricultural uses. It also seeks to ensure that federal policies are administered in a manner that will be compatible with state, local and private policies that protect farmland.
Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (January 10, 2001)	Federal agencies	Environmental Resource Management	Directs Federal agencies taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement, within 2 years, a process to support the conservation intent of the migratory bird conventions, restore and enhance the habitat of migratory birds, as practicable, and prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds.
Executive Order 11988, Floodplain Management (May 24, 1977)	Federal agencies	Environmental Resource Management	Directs Federal agencies, whenever there is a reasonable alternative, to avoid any short- or long-term adverse impacts in floodplains.

Statutes and Executive Orders	Applicability	Category	Specific Requirements
Executive Order 11990, Protection of Wetlands (May 24, 1977)	Federal agencies	Environmental Resource Management	Directs Federal agencies, whenever there is a reasonable alternative, to avoid any short- or long-term adverse impacts in wetlands. Federal agency actions should minimize the destruction, loss, or degradation of wetlands.
Atomic Energy Act of 1954, 42 U.S.C. §2011 et seq.	DOE, NRC, EPA and users of nuclear materials	Nuclear Materials Use	Provides the fundamental US law on both the civilian and the military uses of nuclear materials. The Act requires that civilian uses of nuclear materials and facilities be licensed, and it empowers the NRC to establish by rule or order, and to enforce, such standards to govern these uses as "the Commission may deem necessary or desirable in order to protect health and safety and minimize danger to life or property." Commission action under the Act must conform to the Act's procedural requirements, which provide an opportunity for hearings and Federal judicial review in many instances.
Energy Reorganization Act of 1974, 42 USC 5801 et seq	DOE, NRC, EPA, and users of nuclear materials	Nuclear Materials Use	Reorganized and consolidated certain functions of the Federal government in a new Energy Research and Development Administration, now DOE, and in a new NRC. This Act assigned to DOE the responsibility for the development and production of nuclear weapons, promotion of nuclear power, and other energy-related work, and assigned to the NRC the regulatory work, which does not include regulation of defense nuclear facilities
Department of Energy Organization Act of 1977, 42 USC §§7132 et seq.	DOE and NRC	Nuclear Materials Use	The Energy Research and Development Administration became DOE under this Act and the Act authorized NRC to license specific DOE facilities: demonstration liquid metal fast breeder reactors and other demonstration nuclear reactors when part of an electric utility

Statutes and Executive Orders	Applicability	Category	Specific Requirements
			system, facilities for the receipt and storage of high-level radioactive waste, and retrievable storage facilities authorized for long-term storage of high-level radioactive waste generated by DOE.
Price-Anderson Nuclear Industries Indemnity Act of 1957 and Re-authorization, 42 USC §2210	DOE, NRC, EPA, and users of nuclear materials	Nuclear Materials Use	Enacted as an amendment to the Atomic Energy Act to establish a system of financial protection for persons who may be liable for a nuclear accident or incident and for persons who may be injured.
Clean Air Act of 1963, 1965, 1967, 1970, 1977 and 1990, 42 USC 7401 et seq.	Industrial facilities	Environmental Protection	Basic elements of the act include national ambient air quality standards for major air pollutants believed to cause increases in human mortality or serious human illness, hazardous air pollutants standards including use of “maximum achievable control technology,” state attainment plans, motor vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.
Federal Water Pollution Control Act of 1948, 1972 (Clean Water Act), 33 USC 1251 et seq.	Industrial facilities	Environmental Protection	This Act is a complex series of laws that govern and regulate waterways and improve watersheds nationwide by restoring and maintaining the chemical, physical and biological integrity of the nation's waters. The CWA has five main elements: (1) a system of minimum national effluent standards for each industry, (2) water quality standards, (3) a discharge permit program that translates these standards into enforceable limits, (4) provisions for special problems such as toxic chemicals and oil spills, and (5) a revolving construction loan program for publicly-owned treatment works. All facilities

Statutes and Executive Orders	Applicability	Category	Specific Requirements
			that discharge wastewaters to a surface water body must comply with this Act.
Noise Pollution and Abatement Act of 1972 (Noise Control Act), 42 USC §4901, 4918	Industrial facilities	Environmental Protection	This Act initiated a Federal program of noise pollution regulation that was abandoned in 1981, but left a legacy of noise control regulations at the state and local level. Noise pollution is displeasing human or machine created sound that disrupts the environment. Initially this Act and its implementing regulations had a significant effect on transportation programs and also federally funded housing programs in the US. They also gave states and cities an impetus to consider environmental noise in their planning and zoning decisions.
Safe Drinking Water Act of 1974, 42 USC 300f et seq.	Industrial facilities that discharge to a body of water	Environmental Protection	This Act ensures safe drinking water for Americans. With this Act, the EPA is allowed to regulate the nation's public drinking water supply by setting health-based standards for drinking water to protect against both naturally-occurring and man-made contaminants.
Emergency Planning and Community Right to Know Act of 1986, 42 USC 11001-11050	Federal and industrial facilities	Environmental Protection	This Act requires notification to local emergency planning organizations about hazardous materials that are stored at and released from sites, planned responses to unplanned hazardous releases, report requirements for hazardous and toxic substances, and provides penalties for violations of these requirements.
Pollution Prevention Act of 1990, 42 USC 13101 et seq.	Federal and industrial facilities	Environmental Protection	This Act established pollution prevention as a national objective and focused industry, government, and public attention on reducing the amount of pollution through cost-effective changes in production, operation, and raw materials use
Executive Order	Federal	Environmental	This Order direct all Federal agencies to

Statutes and Executive Orders	Applicability	Category	Specific Requirements
12088, Federal Compliance with Pollution Control Standards (October 13, 1978)	agencies	Protection	take all necessary actions for the prevention, control, and abatement of environmental pollution at facilities under the control of the agency in accordance with the Toxic Substances Control Act, the Clean Water Act, The Safe Drinking Water Act, the Clean Air Act, the Noise Control Act, the Resource Conservation and Recovery Act, Atomic Energy Act and the Federal Insecticide, Fungicide, and Rodenticide Act.
Executive Order 12856, Right to Know Laws and Pollution Prevention Requirements (August 3, 1993)	Federal agencies	Environmental Protection	This Order directs all Federal agencies to take all necessary actions for the prevention of pollution with respect to that agency's activities and facilities by reducing and reporting toxic chemicals entering any waste stream; improving emergency planning, response, and accident notification; encouraging the use of cleaner technologies; and researching cleaner technologies.
Solid Waste Disposal Act of 1976, 42 USC §6902	Industrial facilities	Waste Management	This Act regulates the management of solid waste. Solid waste is broadly defined to include any garbage, refuse, sludge, or other discarded material including solid, liquid, semisolid, or contained gaseous materials resulting from requirements and controls for transport, test procedures, and administrative requirements. Source, special nuclear or by-product material, as defined by the Atomic Energy Act (AEA), is specifically excluded as solid waste.
Resource Conservation and Recovery Act (RCRA) of 1976, 42 USC s/s 6901 et seq.	Industrial facilities	Waste Management	RCRA creates the framework for the proper management of hazardous and nonhazardous solid waste. RCRA established three interrelated programs: the solid waste program to manage nonhazardous industrial and municipal

Statutes and Executive Orders	Applicability	Category	Specific Requirements
			solid waste, to establish criteria for solid waste landfills and other solid waste disposal facilities and banned the open dumping of solid waste; the hazardous waste program that established strict controls on the generation, transportation, treatment, storage, and disposal of hazardous waste; and the underground storage tank program to provide guidance on correct installation, leak detection, and spill, overfill, and corrosion protection for tanks containing hazardous substances and petroleum products.
Federal Facility Compliance Act of 1992, 42 USC §6961	Federal facilities	Waste Management	The Act broadens the waiver of the Government's sovereign immunity in regards to compliance with the treatment, storage and disposal of hazardous wastes at Federal facilities, for example, from fines and penalties for RCRA violations at Federal facilities.
Land Disposal Program Flexibility Act of 1996, 42 USC §6924	Industrial facilities	Waste Management	This Act amends land disposal restriction provisions and ground water monitoring at solid waste landfill units.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (Superfund), 42 USC s/s 9601 et seq.	Industrial facilities	Waste Management	CERCLA provides a Federal “Superfund” to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through the Act, EPA was given power to seek out those parties responsible for any release and assure their cooperation in the cleanup. Through various enforcement tools, EPA obtains private party cleanup through orders, consent decrees, and other small party settlements.

Statutes and Executive Orders	Applicability	Category	Specific Requirements
Low-Level Radioactive Waste Policy Act of 1980, 42 USC 2021 et seq.	Federal facilities, NRC and radioactive materials users	Waste Management	This Act specifies that Federal agencies are responsible for the disposal of LLW that is generated by their activities. This Act gave States the responsibility to dispose of low-level radioactive waste generated within their borders and allows them to form compacts to locate facilities to serve a group of States. The Act provides that the facilities be regulated by the NRC or by States that have entered into Agreements with the NRC under section 274 of the Atomic Energy Act.
Nuclear Waste Policy Act of 1982, 42 USC 10101 et seq.	DOE, Federal and industrial facilities	Waste Management	This Act established both the Federal government's responsibility to provide a place for the permanent disposal of high-level radioactive waste and spent nuclear fuel, and the generators' responsibility to bear the costs of permanent disposal. Amendments to the Act have focused the Federal government's efforts, through the DOE, on studying a possible site at Yucca Mountain, Nevada.
Low-Level Radioactive Waste Policy Amendments Act of 1985, 42 USC 2021b et seq.	Federal facilities, NRC and radioactive materials users	Waste Management	This amendment to the Act provides States more time (until 1992) to develop facilities and to provide incentives for volume reduction of LLW. The Act also requires NRC to establish standards for determining when radionuclides are present in waste streams in sufficiently low concentrations or quantities as to be "below regulatory concern." Federally generated wastes disposed of at non-Federal facilities are subject to the same requirements as waste that is not generated at Federal facilities.
Superfund Amendments and Reauthorization Act (SARA) of 1986,	Industrial facilities	Waste Management	This Act reauthorized CERCLA to continue cleanup activities around the country. Several site-specific amendments, definitions clarifications,

Statutes and Executive Orders	Applicability	Category	Specific Requirements
42 USC 9601 et seq.			and technical requirements were added to the legislation, including additional enforcement authorities to facilitate administration of the complex Superfund program.
Low-Level Radioactive Waste Policy Amendments Act of 1989, 42 USC 2021 et seq.	DOE	Waste Management	This amendment to the Act requires DOE to dispose of greater than Class C LLW in a facility licensed by the NRC.
WIPP Land Withdrawal Act of 1991, P.L. 102-579, as amended by P.L. 104-201 in 1995	EPA and DOE	Waste Management	This Act authorized the development of the Waste Isolation Pilot Plant (WIPP) as a research and development facility located near Carlsbad, New Mexico. WIPP was established with the mission of demonstrating the safe and effective transportation, handling, and disposal of TRU wastes generated from US defense activities. WIPP is currently the only planned permanent storage facility for TRU waste.
Hazardous Material Transportation Act of 1975, 49 USC 5101 et seq.	Shippers, carriers, and receivers of hazardous materials	Transportation	This Act is the major transportation-related statute affecting transportation of hazardous cargoes and directed the Secretary of Transportation to promulgate regulation for the safe transport of hazardous materials in intrastate, interstate, and foreign commerce. The Act addresses material designations, packaging requirements, operational rules and enforcement. The Act also preempts state and local governmental requirements that are inconsistent with the statute, unless that requirement affords an equal or greater level of protection to the public than the HMTA requirement.
Hazardous Materials	Shippers, carriers, and	Transportation	This Act was intended to clarify the maze of conflicting state, local, and Federal

Statutes and Executive Orders	Applicability	Category	Specific Requirements
Transportation Uniform Safety Act of 1990, 49 USC 5101 et seq.	receivers of hazardous materials		regulations regarding the safe transport of hazardous materials in intrastate, interstate, and foreign commerce. The statute includes provisions to encourage uniformity among different state and local highway routing regulations, to develop criteria for the issuance of federal permits to motor carriers of hazardous materials, and to regulate the transport of radioactive materials.
Department of Energy Organization Act of 1977, 42 USC 7256	DOE	Property Management	In addition to creating the DOE from ERDA (refer to Section 5.1.1.4), this Act also allowed DOE to lease excess property for up to five years with less restrictive requirements than under the AEA.
Community Environmental Response Facilitation Act of 1992, PL 102-426	DOE	Property Management	This Act requires Federal agencies to identify portions of real property where no hazardous substances have been disposed of, stored, or released so that property transfers for economic redevelopment can occur.
Hall Amendment (Section 3154) to the National Defense Authorization Act of 1994, 42 USC 7256	DOE	Property Management	This Act amends the Department of Energy Organization Act of 1977 to allow DOE to lease excess and unneeded property for up to ten years at DOE facilities that are to be closed or reconfigured. Provides greater certainty to tenants interested in longer-term leases.
Executive Order 12512, Federal Real Property Management (April 29, 1985)	Federal agencies	Property Management	This Order directs General Services Administration to provide government-wide policy oversight and guidance for Federal real property management.
Occupational Safety and Health Act of 1970, 29 USC 651 et seq.	All	Chemical and industrial safety	This Act ensures worker and workplace safety by having employers provide their workers a place of employment free from recognized hazards to safety and health,

Statutes and Executive Orders	Applicability	Category	Specific Requirements
			such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions. The Occupational Safety and Health Administration, a division of the US Department of Labor oversee administration of the Act.

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7-2 DOE Regulations Applicable to the CFTC

Regulation 10 CFR Part	Title
<u>707</u>	<u>Workplace substance abuse programs at DOE sites</u>
<u>708</u>	<u>DOE contractor employee protection program</u>
<u>709</u>	<u>Polygraph examination regulations</u>
<u>710</u>	<u>Criteria and procedures for determining eligibility for access to classified matter or special nuclear material</u>
<u>770</u>	<u>Transfer of real property at defense nuclear facilities for economic development</u>
<u>820</u>	<u>Procedural rules for DOE nuclear activities</u>
<u>824</u>	<u>Procedural rules for the assessment of civil penalties for classified information security violations</u>
<u>830</u>	<u>Nuclear safety management</u>
<u>835</u>	<u>Occupational radiation protection</u>
<u>840</u>	<u>Extraordinary nuclear occurrences</u>
<u>851</u>	<u>Worker Safety and Health Program</u>
<u>960</u>	<u>General guidelines for the preliminary screening of potential sites for nuclear waste repositories</u>
<u>961</u>	<u>Standard contract for disposal of spent nuclear fuel and/or high-level radioactive waste</u>
<u>962</u>	<u>Byproduct material</u>
<u>963</u>	<u>YUCCA mountain site suitability guidelines</u>
<u>1016</u>	<u>Safeguarding of restricted data</u>
<u>1017</u>	<u>Identification and protection of unclassified controlled nuclear information</u>
<u>1021</u>	<u>National Environmental Policy Act implementing procedures</u>
<u>1022</u>	<u>Compliance with floodplain and wetland environmental review requirements</u>
<u>1023</u>	<u>Contract appeals</u>
<u>1044</u>	<u>Security requirements for protected disclosures under section 3164 of the National Defense Authorization Act for fiscal year 2000</u>
<u>1045</u>	<u>Nuclear classification and declassification</u>
<u>1046</u>	<u>Physical protection of security interests</u>
<u>1047</u>	<u>Limited arrest authority and use of force by protective force officers</u>

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Table 7-3 DOE Orders Applicable to the CFTC

Policy, Order, Guideline, or Manual	Title
<u>DOE P 141.1</u>	Department of Energy Management of Cultural Resources
<u>DOE P 226.1</u>	Department of Energy Oversight Policy
<u>DOE P 410.1A</u>	Promulgating Nuclear Safety Requirements
<u>DOE P 411.1</u>	Safety Management Functions, Responsibilities, and Authorities Policy
<u>DOE P 413.1</u>	Program and Project Management Policy for the Planning, Programming, Budgeting, and Acquisition of Capital Assets
<u>DOE P 413.2</u>	Value Engineering
<u>DOE P 441.1</u>	DOE Radiological Health and Safety Policy
<u>DOE P 442.1</u>	Differing Professional Opinions on Technical Issues.
<u>DOE P 450.2A</u>	Identifying, Implementing and Complying with Environment, Safety and Health Requirements
<u>DOE P 450.3</u>	Authorizing Use of the Necessary and Sufficient Process for Standards-Based Environment, Safety and Health Management
<u>DOE P 450.4</u>	Safety Management System Policy
<u>DOE P 450.7</u>	Environment, Safety and Health (ESH) Goals
<u>DOE P 470.1</u>	Integrated Safeguards and Security Management (ISSM) Policy
<u>DOE P 580.1</u>	Management Policy for Planning, Programming, Budgeting, Operation, Maintenance and Disposal of Real Property
<u>DOE O 142.1</u>	Classified Visits Involving Foreign Nationals
<u>DOE O 142.2A</u>	Voluntary Offer Safeguards Agreement and Additional Protocol with the International Atomic Energy Agency
<u>DOE O 142.3</u>	Unclassified Foreign Visits and Assignments
<u>DOE O 151.1C</u>	Comprehensive Emergency Management System
<u>DOE O 205.1A</u>	Department of Energy Cyber Security Management
<u>DOE O 210.2</u>	DOE Corporate Operating Experience Program
<u>DOE O 221.1</u>	Reporting Fraud, Waste, and Abuse To The Office of Inspector General
<u>DOE O 225.1A</u>	Accident Investigations
<u>DOE O 226.1</u>	Implementation of Department of Energy Oversight Policy
<u>DOE O 231.1A</u>	Environment, Safety and Health Reporting
<u>DOE O 225.1A</u>	Accident Investigations
<u>DOE O 243.1</u>	Records Management Program
<u>DOE O 243.2</u>	Vital Records
<u>DOE O 252.1</u>	Technical Standards Program
<u>DOE O 412.1A</u>	Work Authorization System

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Policy, Order, Guideline, or Manual	Title
<u>DOE O 413.1A</u>	Management Control Program
<u>DOE O 413.3A</u>	Program and Project Management for the Acquisition of Capital Assets
<u>DOE O 414.1C</u>	Quality Assurance
<u>DOE O 420.1B</u>	Facility Safety
<u>DOE O 425.1C</u>	Startup and Restart of Nuclear Facilities
<u>DOE O 430.1B</u>	Real Property Asset Management
<u>DOE O 433.1A</u>	Maintenance Management Program for DOE Nuclear
<u>DOE O 435.1</u>	Radioactive Waste Management
<u>DOE O 440.1A</u>	Worker Protection Management for DOE Federal and Contractor Employees
<u>DOE O 442.1A</u>	Department of Energy Employee Concerns Program
<u>DOE O 450.1</u>	Environmental Protection Program
<u>DOE O 451.1B</u>	National Environmental Policy Act Compliance Program - Change 1
<u>DOE O 460.1B</u>	Packaging and Transportation Safety
<u>DOE O 460.2A</u>	Departmental Materials Transportation and Packaging Management
<u>DOE O 470.2B</u>	Independent Oversight and Performance Assurance Program
<u>DOE O 470.3A</u>	Design Basis Threat Policy (U)
<u>DOE O 470.4</u>	Safeguards and Security Program
<u>DOE O 471.1A</u>	Identification and Protection of Unclassified Controlled Nuclear Information
<u>DOE O 471.3</u>	Identifying and Protecting Official Use Only Information
<u>DOE O 535.1</u>	Time and Attendance Reporting
<u>DOE O 552.1A</u>	Travel Policy and Procedures
<u>DOE O 3792.3</u>	Drug-Free Federal Workplace Testing Implementation Program
<u>DOE O 5400.5</u>	Radiation Protection of the Public and the Environment
<u>DOE O 5480.19</u>	Conduct of Operations Requirements for DOE Facilities
<u>DOE O 5480.20A</u>	Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities
<u>DOE O 3792.3</u>	Drug-Free Federal Workplace Testing Implementation Program
<u>DOE O 5660.1B</u>	Management of Nuclear Materials
<u>DOE M 140.1-1B</u>	Interface With The Defense Nuclear Facilities Safety Board
<u>DOE M 231.1-1A</u>	Environment, Safety and Health Reporting Manual
<u>DOE M 231.1-2</u>	Occurrence Reporting and Processing of Operations Information
<u>DOE M 251.1-1B</u>	Departmental Directives Program Manual
<u>DOE M 413.3-1</u>	Project Management for the Acquisition of Capital Assets
<u>DOE M 435.1-1</u>	Radioactive Waste Management Manual

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Policy, Order, Guideline, or Manual	Title
<u>DOE M 440.1-1A</u>	DOE Explosives Safety Manual
<u>DOE M 450.4-1</u>	Integrated Safety Management System Manual
<u>DOE M 452.2-1</u>	Nuclear Explosive Safety
<u>DOE M 460.2-1</u>	Radioactive Material Transportation Practices
<u>DOE M 461.1-1</u>	Packaging and Transfer of Materials of National Security Interest Manual
<u>DOE M 470.4-1</u>	Safeguards and Security Program Planning and Management
<u>DOE M 470.4-2</u>	Physical
<u>DOE M 470.4-3</u>	Protective Force
<u>DOE M 470.4-4</u>	Information Security
<u>DOE M 470.4-5</u>	Personnel Security
<u>DOE M 470.4-6</u>	Nuclear Material Control and Accountability
<u>DOE M 471.1-1</u>	Identification and Protection of Unclassified Controlled Nuclear Information Manual
<u>DOE M 471.2-2</u>	Classified Information Systems Security Manual
<u>DOE M 471.2-3A</u>	Special Access Program Policies, Responsibilities, and Procedures
<u>DOE M 471.3-1</u>	Manual for Identifying and Protecting Official Use Only Information
<u>DOE M 475.1-1A</u>	Identifying Classified Information

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Table 7-4 NRC Regulations Applicable to the CFTC

Regulation 10 CFR Part	Title
<u>2</u>	<u>Rules of practice for domestic licensing proceedings and issuance of orders</u>
<u>11</u>	<u>Criteria and procedures for determining eligibility for access to or control over special nuclear material</u>
<u>19</u>	<u>Notices, instructions and reports to workers: inspection and investigations</u>
<u>20</u>	<u>Standards for protection against radiation</u>
<u>21</u>	<u>Reporting of defects and noncompliance</u>
<u>25</u>	<u>Access authorization for licensee personnel</u>
<u>26</u>	<u>Fitness for duty programs</u>
<u>30</u>	<u>Rules of general applicability to domestic licensing of byproduct material</u>
<u>31</u>	<u>General domestic licenses for byproduct material</u>
<u>34</u>	<u>Licenses for industrial radiography and radiation safety requirements for industrial radiographic operations</u>
<u>40</u>	<u>Domestic licensing of source material</u>
<u>50</u>	<u>Domestic licensing of production and utilization facilities</u>
<u>51</u>	<u>Environmental protection regulations for domestic licensing and related regulatory functions</u>
<u>60</u>	<u>Disposal of high-level radioactive wastes in geologic repositories</u>
<u>61</u>	<u>Licensing requirements for land disposal of radioactive waste</u>
<u>62</u>	<u>Criteria and procedures for emergency access to non-federal and regional low-level waste disposal facilities</u>
<u>63</u>	<u>Disposal of high-level radioactive wastes in a geologic repository at Yucca Mountain, Nevada</u>
<u>70</u>	<u>Domestic licensing of special nuclear material</u>
<u>71</u>	<u>Packaging and transportation of radioactive material</u>
<u>72</u>	<u>Licensing requirements for the independent storage of spent nuclear fuel, high-level radioactive waste, and reactor-related greater than Class C waste</u>
<u>73</u>	<u>Physical protection of plants and materials</u>
<u>74</u>	<u>Material control and accounting of special nuclear material</u>
<u>75</u>	<u>Safeguards on nuclear material--implementation of US/IAEA agreement</u>
<u>95</u>	<u>Facility security clearance and safeguarding of national security information and restricted data</u>
<u>100</u>	<u>Reactor Site Criteria</u>
<u>171</u>	<u>Annual fees for reactor licenses and fuel cycle licenses and materials licenses, including holders of certificates of compliance, registrations, and quality assurance program approvals and government agencies licensed by the NRC</u>

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Table 7-5 NRC Regulations Applicable to the ARR

Regulation 10 CFR Part	Title
<u>2</u>	<u>Rules of practice for domestic licensing proceedings and issuance of orders</u>
<u>11</u>	<u>Criteria and procedures for determining eligibility for access to or control over special nuclear material</u>
<u>19</u>	<u>Notices, instructions and reports to workers: inspection and investigations</u>
<u>20</u>	<u>Standards for protection against radiation</u>
<u>21</u>	<u>Reporting of defects and noncompliance</u>
<u>25</u>	<u>Access authorization for licensee personnel</u>
<u>26</u>	<u>Fitness for duty programs</u>
<u>30</u>	<u>Rules of general applicability to domestic licensing of byproduct material</u>
<u>31</u>	<u>General domestic licenses for byproduct material</u>
<u>34</u>	<u>Licenses for industrial radiography and radiation safety requirements for industrial radiographic operations</u>
<u>40</u>	<u>Domestic licensing of source material</u>
<u>50</u>	<u>Domestic licensing of production and utilization facilities</u>
<u>51</u>	<u>Environmental protection regulations for domestic licensing and related regulatory functions</u>
<u>52</u>	<u>Early site permits; standard design certifications; and combined licenses for nuclear power plants</u>
<u>60</u>	<u>Disposal of high-level radioactive wastes in geologic repositories</u>
<u>61</u>	<u>Licensing requirements for land disposal of radioactive waste</u>
<u>62</u>	<u>Criteria and procedures for emergency access to non-federal and regional low-level waste disposal facilities</u>
<u>63</u>	<u>Disposal of high-level radioactive wastes in a geologic repository at Yucca Mountain, Nevada</u>
<u>71</u>	<u>Packaging and transportation of radioactive material</u>
<u>72</u>	<u>Licensing requirements for the independent storage of spent nuclear fuel, high-level radioactive waste, and reactor-related greater than Class C waste</u>
<u>73</u>	<u>Physical protection of plants and materials</u>
<u>74</u>	<u>Material control and accounting of special nuclear material</u>
<u>95</u>	<u>Facility security clearance and safeguarding of national security information and restricted data</u>
<u>100</u>	<u>Reactor Site Criteria</u>
<u>171</u>	<u>Annual fees for reactor licenses and fuel cycle licenses and materials licenses, including holders of certificates of compliance, registrations, and quality assurance program approvals and government agencies licensed by the NRC</u>

Table 7-6 CFTC Permits, Authorizations, Notifications or Consultations

Permit, Authorization, Notification, or Consultation	Applicable Statute or Regulation	Issuing or Consulting Agency	Relevance
Consultation	National Historic Preservation Act of 1966	Advisory Council on Historic Preservation, Ohio State Historic Preservation Officer	The Federal agency must consult with the Advisory Council on Historic Preservation and the Ohio State Historic Preservation Officer to determine if an eligible or listed property will be impacted by the proposed action. Further, a permit is required for any excavation or removal of archaeological resources from public or Native American lands.
Consultation	Endangered Species Act of 1973, Fish and Wildlife Coordination Act of 1934	US Fish and Wildlife Service; Ohio Department of Natural Resources	A Federal agency must consult with the US Fish and Wildlife Service and the Ohio Department of Natural Resources to identify the presence of any threatened or endangered species, migratory birds, and golden or bald eagles if present and if the proposed action would jeopardize their continued existence or result in the destruction of critical habitat of such species.
Consultation	Farmland Protection Policy Act of 1981	Ohio Department of Agriculture, Farmland Preservation	A Federal agency should minimize their contribution to the unnecessary and irreversible conversion of agricultural land to nonagricultural uses.
Title V Air Operating Permit	Clean Air Act, Title V; OAC 3645-77-02	Ohio EPA's Division of Air Pollution Cont	A Title V Operating Permit is required for sources that are not exempt and are major sources. It is also required for sources subject to the Acid Rain Program, New Source Performance Standards, or to the National Emission Standard for Hazardous Air Pollutants (NESHAPs).
Radionuclide NESHAPs	Clean Air Act, 40 CFR Part 61, and 10 CFR Part 20	US EPA regional office and Ohio EPA, Division of	If the CFTC is licensed by the NRC, then releases are exempt from NESHAPs in accordance with 40

Permit, Authorization, Notification, or Consultation	Applicable Statute or Regulation	Issuing or Consulting Agency	Relevance
		Air Pollution Control	CFR Part 61, Subpart I. DOE facilities are subject to 40 CFR Part 61, Subpart H.
Ohio Permit to Operate	Clean Air Act; 40 CFR Parts 60, 61 and 63; ORC Chapters 3704 and 3745; and OAC Chapters 3745-31, 3745-35, 3745-77	Ohio EPA, Division of Air Pollution Control	If a facility requires a Title V air permit, then a Permit to Operate is not needed. The CFTC requires a Title V Air Permit.
Ohio Permit to Install	Clean Air Act; 40 CFR Parts 60, 61 and 63; ORC Chapters 3704 and 3745; and OAC Chapters 3745-31, 3745-35, 3745-77	Ohio EPA, Division of Air Pollution Control	Prior to the installation of any new air contaminant emissions unit, a Permit to Install must be applied for. Only after the Permit to Install is issued may a facility begin installation and construction of the emissions unit.
Risk Management Plan	Clean Air Act, 40 CFR Part 68, and OAC 3745-104-43	US EPA regional office and Ohio EPA, Division of Air Pollution Control	Facilities that use chemicals in their processes that are listed as regulated toxic and flammable substances must file a Risk Management Plan to identify the hazards, steps to prevent releases and preparations to mitigate any actual releases.
Clean Air Act Conformity Determination	Clean Air Act, 40 CFR Part 93, and OAC 3745-102	Ohio EPA, Division of Air Pollution Control	No Clean Air Act Conformity Determination is required since Pike County, Ohio, is designated as a Cannot be Classified or Better than Standard for all criteria pollutants and contains no maintenance areas. A conformity determination is required for each criteria pollutant where the total direct and indirect emissions in a nonattainment or maintenance area caused by federal action would equal or exceed threshold rates. If the CFTC is a DOE-owned facility, then a conformity determination is required if direct and indirect emissions equal or exceed the threshold rates.

Permit, Authorization, Notification, or Consultation	Applicable Statute or Regulation	Issuing or Consulting Agency	Relevance
Fugitive Emissions Control Plan	OAC 3745-17-08	Ohio EPA, Division of Air Pollution Control	A Construction Fugitive Emissions Control Plan is needed to identify the measures to be taken to minimize fugitive particulate matter that becomes airborne during construction activities.
Burning Permit	OAC 3745-19	Ohio EPA, Division of Air Pollution Control	Should open burning be required during site clearing and grading activities, a permit application at least 10 working days before the burn is initiated is required.
Construction Storm Water Permit, Notice of Intent, and Storm Water Pollution Prevention Plan	Clean Water Act, 40 CFR § 122.26, 40 CFR §§122.30 through 122.37, ORC Chapter 6111, OAC Chapter 3745-39	Ohio EPA, Division of Surface Water	A construction storm water discharge permit is needed before any soil disturbance of greater than one acre such as clearing, grubbing, grading, placement of fill or excavating, can begin on the CFTC site. Ohio has a general NPDES Permit for Storm Water Discharges in Ohio, OEPA Permit OHC000002, which covers storm-water discharges during construction, including storm-water discharges from an on-site concrete batch plant. Use of this permit requires submittal of a Notice of Intent to discharge under Permit OHC000002 and a Storm Water Pollution Prevention Plan (SWPPP).
Industrial Facility Storm Water Permit, Notice of Intent, and Storm Water Pollution Prevention Plan	Clean Water Act, 40 CFR § 122.26, 40 CFR §§122.30 through 122.37, ORC Chapter 6111, OAC Chapter 3745-39	Ohio EPA, Division of Surface Water	An industrial storm water discharge permit is needed from Ohio EPA for storm water that will be discharged from the site during operations unless an existing NPDES permitted outfall on the PORTS site can be used.
Ohio Surface Water Permit to Install	Clean Water Act, ORC Chapter 6111, OAC Chapter 3745-42, OAC Rule 3745-1-05, OAC 3745-31-02	Ohio EPA, Division of Surface Water	Prior to the installation of any new any wastewater treatment system, collection system or disposal facility, a Permit to Install (PTI) must be applied for and issued. This PTI would need to address tie-in to the

Permit, Authorization, Notification, or Consultation	Applicable Statute or Regulation	Issuing or Consulting Agency	Relevance
			existing sanitary waste treatment system covered in permits held by the United States Enrichment Corporation or a permit to install a separate waste treatment system and discharge. A PTI is required before constructing any waste water collection and treatment systems.
Anti-Degradation Review of Permit to Install or NPDES Permit	Clean Water Act, ORC Chapter 6111, OAC Chapter 3745-42, OAC Rule 3745-1-05	Ohio EPA, Division of Surface Water	A permit application (PTI or NPDES) that increases the quantity of pollutants discharged to a receiving stream may require an anti-degradation review for new discharges as well as facility expansions that includes a cost-benefit evaluation of the change in water quality of the receiving stream due to the new or increased discharge.
Clean Water Act Section 404 Dredge and Fill Permit	Clean Water Act, 33 CFR Parts 323 and 330	US Army Corps of Engineers	Section 404 of the Clean Water Act requires a permit to place dredged or fill material into waters of the US, including wetlands; specific activities that will have minimal environmental impacts may be authorized by the Corps under nationwide permits. If specific activities are authorized by a nationwide permit or a regional permit, then a notice must be filed if a nationwide or regional permit applies.
Clean Water Act Section 401 Certification	Clean Water Act, ORC 6111, OAC 3745-32, OAC 3745-1-01 through 32, and OAC 3745-1-50 through 54	Ohio EPA, Division of Surface Water	Section 401 of the Clean Water Act requires state agencies to evaluate projects that will result in the discharge of dredged or fill material into waters of the US to determine whether the discharge will violate water quality standards. Section 401 certification may not be granted for projects that will violate the state's

Permit, Authorization, Notification, or Consultation	Applicable Statute or Regulation	Issuing or Consulting Agency	Relevance
			water quality standards. It is not believed that the GNEP facilities will impact any wetlands.
Isolated Wetlands Permit	ORC 6111, OAC 3745-45-02 and OAC 3745-1-54	Ohio EPA, Division of Surface Water	Any person who wishes to place dredged or fill material into isolated wetlands must apply for and receive an isolated wetland permit from Ohio EPA. It is not believed that the GNEP facilities will impact any wetlands.
Spill Prevention Control and Countermeasures Plan (SPCC)	Clean Water Act, 40 CFR Part 112,	EPA	An SPCC is required for any facility that could discharge oil in harmful quantities into navigable waters or onto adjoining shorelines. It is unlikely that an SPCC will be needed during construction of the CFTC. It is likely that an SPCC will be needed for operation to address the diesel oil inventory that will support standby and emergency diesel generators for the CFTC.
Waste Minimization and Pollution Prevention Plan	RCRA (42 USC 6901 et Seq.)	DOE, NRC	A Waste Minimization and Pollution Prevention Plan is required to meet RCRA waste minimization criteria for the non-hazardous solid waste, hazardous waste, and the hazardous portion of mixed LLW and TRU waste. The CFTC will develop a Waste Minimization and Pollution Prevention Plan.
Registration and Hazardous Waste Generator Identification Number	ORC Chapter 3734, ORC Chapters 3745-50 through 3745-69, OAC 3745-52-12 and 3745-54-11,	Ohio EPA Division of Hazardous Waste	A hazardous waste generator who generates over 220 pounds per calendar month of hazardous waste, in accordance with, must not treat, store, dispose of, transport, or offer for transportation hazardous waste without having received an US EPA generator identification number from US EPA or Ohio EPA.
Hazardous Waste Treatment.	OAC 3745-50-40 through 3745-50-44	Ohio EPA Division of Hazardous Waste	Facilities involved in the treatment, storage, or disposal of hazardous

Permit, Authorization, Notification, or Consultation	Applicable Statute or Regulation	Issuing or Consulting Agency	Relevance
Storage, or Disposal Facility Permit	and OAC 3745-50-62.		waste must obtain a hazardous waste facility permit from Ohio EPA. The CFTC will need a permit for storage and treatment of hazardous and mixed waste prior to off-site disposal. DOE currently has a RCRA Part B permit for storage at the PORTS site. Depending on the final determination of ownership regarding the GNEP facilities, it may be possible to modify the current RCRA Part B permit to include CFTC activities. This may reduce some of the formal steps to obtaining a new RCRA Part B permit.
Construction and Demolition Debris Facility License	ORC Chapter 3714, OAC Chapters 3745-400 and 3745-37	Ohio EPA regional office or the local health department	A license is required before establishing, modifying, operating, or maintaining a facility to dispose of debris from the construction, destruction, alteration, or repair of man-made physical structures.
Industrial Solid Waste Landfill Permit to Install	OAC 3745-29-06	Ohio EPA regional office or the local health department	A permit to install is required before constructing or expanding a solid waste landfill facility in Ohio. It is unlikely that a solid waste landfill will be developed to support the CFTC.
Underground Storage Tank (UST) Permit	40 CFR Part 280, OAC 1301:7-9-06	Ohio Department of Commerce, Bureau of Underground Storage Tank Regulations	A permit is required to install, remove, close-in-place, take out of service for more than 90 days, perform a change in service, perform a major repair that has caused a release, or perform a modification of an UST system or component. Diesel generator fuel storage tanks for the CFTC would qualify as USTs and require a permit to install.
UST Registration	40 CFR Part 280, OAC 1301:7-9-04	Ohio Department of Commerce, Bureau of Underground Storage Tank	Any owner who installs an UST system shall, within thirty days of bringing such UST system into service, submit the applicable new

Permit, Authorization, Notification, or Consultation	Applicable Statute or Regulation	Issuing or Consulting Agency	Relevance
		Regulations, local fire marshall	UST system installation application for registration to the fire marshal for each location where the UST system is installed. Diesel generator fuel storage tanks for the CFTC would need to be registered.
PCB Waste Activity Notification	40 CFR Part 761	EPA	If the CFTC would generate polychlorinated biphenyls (PCBs) then the facilities would be required to notify EPA.
List of Material Safety Data Sheets	29 CFR Part 1910, 40 CFR Part 370, and OAC 3750-30-15	Ohio State Emergency Response Commission	Submission of a list of MSDSs is required for hazardous chemicals that are stored on site in excess of their threshold quantities. The CFTC will submit appropriate MSDSs.
Annual Hazardous Chemical Inventory Report	40 CFR Part 370 and OAC 3750-30-01	Ohio State Emergency Response Commission	Either separately or in conjunction with the other DOE tenants at the PORTS site, an Annual Hazardous Chemical Inventory Report must be submitted.
Notification of On-Site Storage of an Extremely Hazardous Substance	40 CFR Part 355 and OAC 3750-20-05	Ohio State Emergency Response Commission	Within 60 days of commencing on-site storage of an extremely hazardous substance in a quantity greater than the threshold planning quantity, the Ohio State Emergency Response Commission must be notified of such on-site storage.

Table 7-7 ARR Permits, Authorizations, Notifications or Consultations

Permit, Authorization, Notification, or Consultation	Applicable Statute or Regulation	Issuing or Consulting Agency	Relevance
Consultation	National Historic Preservation Act of 1966	Advisory Council on Historic Preservation, Ohio State Historic Preservation Officer	The Federal agency must consult with the Advisory Council on Historic Preservation and the Ohio State Historic Preservation Officer to determine if an eligible or listed property will be impacted by the proposed action. Further, a permit is required for any excavation or removal of archaeological resources from public or Native American lands.
Consultation	Endangered Species Act of 1973, Fish and Wildlife Coordination Act of 1934	US Fish and Wildlife Service; Ohio Department of Natural Resources	A Federal agency must consult with the US Fish and Wildlife Service and the Ohio Department of Natural Resources to identify the presence of any threatened or endangered species, migratory birds, and golden or bald eagles if present and if the proposed action would jeopardize their continued existence or result in the destruction of critical habitat of such species.
Consultation	Farmland Protection Policy Act of 1981	Ohio Department of Agriculture, Farmland Preservation	A Federal agency should minimize their contribution to the unnecessary and irreversible conversion of agricultural land to nonagricultural uses.
Title V Air Operating Permit	Clean Air Act, Title V; OAC 3645-77-02	Ohio EPA's Division of Air Pollution Cont	A Title V Operating Permit is required for sources that are not exempt and are major sources. It is also required for sources subject to the Acid Rain Program, New Source Performance Standards, or to the National Emission Standard for Hazardous Air Pollutants (NESHAPs). The ARR may be subject to NESHAPs and therefore

Permit, Authorization, Notification, or Consultation	Applicable Statute or Regulation	Issuing or Consulting Agency	Relevance
			may require a Title V Air Operating Permit.
Radionuclide NESHAPs	Clean Air Act, 40 CFR Part 61, and 10 CFR Part 20	US EPA regional office and Ohio EPA, Division of Air Pollution Control	If the ARR is licensed by the NRC, then releases are exempt from NESHAPs in accordance with 40 CFR Part 61, Subpart I. DOE facilities are subject to 40 CFR Part 61, Subpart H.
Ohio Permit to Operate	Clean Air Act; 40 CFR Parts 60, 61 and 63; ORC Chapters 3704 and 3745; and OAC Chapters 3745-31, 3745-35, 3745-77	Ohio EPA, Division of Air Pollution Control	If a facility requires a Title V air permit, then a Permit to Operate is not needed. ARR may need a Permit to Operate. An Air Quality Permit to Operate is required for any source that is subject to Prevention of Significant Deterioration, nonattainment areas, New Source Performance Standards, NESHAPs, and state requirements for the Permit to Operate and/or registration of an operating unit with potential air emissions of an amount and type considered minimal.
Ohio Permit to Install	Clean Air Act; 40 CFR Parts 60, 61 and 63; ORC Chapters 3704 and 3745; and OAC Chapters 3745-31, 3745-35, 3745-77	Ohio EPA, Division of Air Pollution Control	Prior to the installation of any new air contaminant emissions unit, a Permit to Install must be applied for. Only after the Permit to Install is issued may a facility begin installation and construction of the emissions unit.
Risk Management Plan	Clean Air Act, 40 CFR Part 68, and OAC 3745-104-43	US EPA regional office and Ohio EPA, Division of Air Pollution Control	Facilities that use chemicals in their processes that are listed as regulated toxic and flammable substances must file a Risk Management Plan to identify the hazards, steps to prevent releases and preparations to mitigate any actual releases.
Clean Air Act Conformity Determination	Clean Air Act, 40 CFR Part 93, and OAC 3745-102	Ohio EPA, Division of Air Pollution Control	No Clean Air Act Conformity Determination is required since Pike County, Ohio, is designated as a Cannot be Classified or Better than Standard for all criteria pollutants

Permit, Authorization, Notification, or Consultation	Applicable Statute or Regulation	Issuing or Consulting Agency	Relevance
			and contains no maintenance areas. A conformity determination is required for each criteria pollutant where the total direct and indirect emissions in a nonattainment or maintenance area caused by federal action would equal or exceed threshold rates. If the ARR is a DOE-owned facility, then a conformity determination is required if direct and indirect emissions equal or exceed the threshold rates.
Fugitive Emissions Control Plan	OAC 3745-17-08	Ohio EPA, Division of Air Pollution Control	A Construction Fugitive Emissions Control Plan is needed to identify the measures to be taken to minimize fugitive particulate matter that becomes airborne during construction activities.
Burning Permit	OAC 3745-19	Ohio EPA, Division of Air Pollution Control	Should open burning be required during site clearing and grading activities, a permit application at least 10 working days before the burn is initiated is required.
Construction Storm Water Permit, Notice of Intent, and Storm Water Pollution Prevention Plan	Clean Water Act, 40 CFR § 122.26, 40 CFR §§122.30 through 122.37, ORC Chapter 6111, OAC Chapter 3745-39	Ohio EPA, Division of Surface Water	A construction storm water discharge permit is needed before any soil disturbance of greater than one acre such as clearing, grubbing, grading, placement of fill or excavating, can begin on the CFTC and ARR site. Ohio has a general NPDES Permit for Storm Water Discharges in Ohio, OEPA Permit OHC000002, which covers storm-water discharges during construction, including storm-water discharges from an on-site concrete batch plant. Use of this permit requires submittal of a Notice of Intent to discharge under Permit OHC000002 and a Storm Water Pollution Prevention Plan (SWPPP).

Permit, Authorization, Notification, or Consultation	Applicable Statute or Regulation	Issuing or Consulting Agency	Relevance
Industrial Facility Storm Water Permit, Notice of Intent, and Storm Water Pollution Prevention Plan	Clean Water Act, 40 CFR § 122.26, 40 CFR §§122.30 through 122.37, ORC Chapter 6111, OAC Chapter 3745-39	Ohio EPA, Division of Surface Water	An industrial storm water discharge permit is needed from Ohio EPA for storm water that will be discharged from the site during operations unless an existing NPDES permitted outfall on the PORTS site can be used.
Ohio Surface Water Permit to Install	Clean Water Act, ORC Chapter 6111, OAC Chapter 3745-42, OAC Rule 3745-1-05, OAC 3745-31-02	Ohio EPA, Division of Surface Water	Prior to the installation of any new any wastewater treatment system, collection system or disposal facility, a Permit to Install (PTI) must be applied for and issued. This PTI would need to address tie-in to the existing sanitary waste treatment system covered in permits held by the United States Enrichment Corporation or a permit to install a separate waste treatment system and discharge. A PTI is required before constructing any waste water collection and treatment systems.
Anti-degradation Review of Permit to Install or NPDES Permit	Clean Water Act, ORC Chapter 6111, OAC Chapter 3745-42, OAC Rule 3745-1-05	Ohio EPA, Division of Surface Water	A permit application (PTI or NPDES) that increases the quantity of pollutants discharged to a receiving stream may require an anti-degradation review for new discharges as well as facility expansions that includes a cost-benefit evaluation of the change in water quality of the receiving stream due to the new or increased discharge.
Clean Water Act Section 404 Dredge and Fill Permit	Clean Water Act, 33 CFR Parts 323 and 330	US Army Corps of Engineers	Section 404 of the Clean Water Act requires a permit to place dredged or fill material into waters of the US, including wetlands; specific activities that will have minimal environmental impacts may be authorized by the Corps under nationwide permits. If specific activities are authorized by a

Permit, Authorization, Notification, or Consultation	Applicable Statute or Regulation	Issuing or Consulting Agency	Relevance
			nationwide permit or a regional permit, then a notice must be filed if a nationwide or regional permit applies.
Clean Water Act Section 401 Certification	Clean Water Act, ORC 6111, OAC 3745-32, OAC 3745-1-01 through 32, and OAC 3745-1-50 through 54	Ohio EPA, Division of Surface Water	Section 401 of the Clean Water Act requires state agencies to evaluate projects that will result in the discharge of dredged or fill material into waters of the US to determine whether the discharge will violate water quality standards. Section 401 certification may not be granted for projects that will violate the state's water quality standards. It is not believed that the GNEP facilities will impact any wetlands.
Isolated Wetlands Permit	ORC 6111, OAC 3745-45-02 and OAC 3745-1-54	Ohio EPA, Division of Surface Water	Any person who wishes to place dredged or fill material into isolated wetlands must apply for and receive an isolated wetland permit from Ohio EPA. It is believed that the GNEP facilities will not impact any wetlands.
Spill Prevention Control and Countermeasures Plan (SPCC)	Clean Water Act, 40 CFR Part 112,	EPA	An SPCC is required for any facility that could discharge oil in harmful quantities into navigable waters or onto adjoining shorelines. It is unlikely that an SPCC will be needed during construction of the ARR. It is likely that an SPCC will be needed for operation to address the diesel oil inventory that will support standby and emergency diesel generators for the ARR.
Waste Minimization and Pollution Prevention Plan	RCRA (42 USC 6901 et Seq.)	DOE, NRC	A Waste Minimization and Pollution Prevention Plan is required to meet RCRA waste minimization criteria for the non-hazardous solid waste, hazardous waste, and the hazardous portion of mixed LLW and TRU waste. The ARR will develop Waste

Permit, Authorization, Notification, or Consultation	Applicable Statute or Regulation	Issuing or Consulting Agency	Relevance
			Minimization and Pollution Prevention Plans in accordance with NRC guidance.
Registration and Hazardous Waste Generator Identification Number	ORC Chapter 3734, ORC Chapters 3745-50 through 3745-69, OAC 3745-52-12 and 3745-54-11,	Ohio EPA Division of Hazardous Waste	A hazardous waste generator who generates over 220 pounds per calendar month of hazardous waste, in accordance with, must not treat, store, dispose of, transport, or offer for transportation hazardous waste without having received a US EPA generator identification number from US EPA or Ohio EPA.
Hazardous Waste Treatment. Storage, or Disposal Facility Permit	OAC 3745-50-40 through 3745-50-44 and OAC 3745-50-62.	Ohio EPA Division of Hazardous Waste	Facilities involved in the treatment, storage, or disposal of hazardous waste must obtain a hazardous waste facility permit from Ohio EPA. It is uncertain if the ARR will need a permit for storage and treatment prior to off-site disposal of hazardous and mixed waste.
Construction and Demolition Debris Facility License	ORC Chapter 3714, OAC Chapters 3745-400 and 3745-37	Ohio EPA regional office or the local health department	A license is required before establishing, modifying, operating, or maintaining a facility to dispose of debris from the construction, destruction, alteration, or repair of man-made physical structures.
Industrial Solid Waste Landfill Permit to Install	OAC 3745-29-06	Ohio EPA regional office or the local health department	A permit to install is required before constructing or expanding a solid waste landfill facility in Ohio. It is unlikely that a solid waste landfill will be developed to support the ARR.
Underground Storage Tank (UST) Permit	40 CFR Part 280, OAC 1301:7-9-06	Ohio Department of Commerce, Bureau of Underground Storage Tank Regulations	A permit is required to install, remove, close-in-place, take out of service for more than 90 days, perform a change in service, perform a major repair that has caused a release, or perform a modification of an UST system or component. Diesel generator fuel storage tanks for the ARR would qualify as USTs

Permit, Authorization, Notification, or Consultation	Applicable Statute or Regulation	Issuing or Consulting Agency	Relevance
			and require a permit to install.
UST Registration	40 CFR Part 280, OAC 1301:7-9-04	Ohio Department of Commerce, Bureau of Underground Storage Tank Regulations, local fire marshal	Any owner who installs an UST system shall, within thirty days of bringing such UST system into service, submit the applicable new UST system installation application for registration to the fire marshal for each location where the UST system is installed. Diesel generator fuel storage tanks for the ARR would need to be registered.
PCB Waste Activity Notification	40 CFR Part 761	EPA	If the ARR would generate polychlorinated biphenyls (PCBs) then the facility would be required to notify EPA.
List of Material Safety Data Sheets	29 CFR Part 1910, 40 CFR Part 370, and OAC 3750-30-15	Ohio State Emergency Response Commission	Submission of a list of MSDSs is required for hazardous chemicals that are stored on site in excess of their threshold quantities. The ARR will submit appropriate MSDSs.
Annual Hazardous Chemical Inventory Report	40 CFR Part 370 and OAC 3750-30-01	Ohio State Emergency Response Commission	Either separately or in conjunction with the other DOE tenants at the PORTS site, an Annual Hazardous Chemical Inventory Report must be submitted.
Notification of On-Site Storage of an Extremely Hazardous Substance	40 CFR Part 355 and OAC 3750-20-05	Ohio State Emergency Response Commission	Within 60 days of commencing on-site storage of an extremely hazardous substance in a quantity greater than the threshold planning quantity, the Ohio State Emergency Response Commission must be notified of such on-site storage.

8 Conclusions

As stated in the purpose and scope, this Detailed Site Study document describes the proposed GNEP sites at PORTS and the basis for proposing these two sites; the affected environment that could be disturbed by the proposed facilities, site infrastructure that could be used by the new facilities, any limitations the specific location of the proposed facilities may have on facility size, scale and design of the proposed facilities, and identifies the regulatory and permitting information requested in the FOA to evaluate certain sites as potential locations for the anticipated GNEP facilities including any legislative or regulatory prohibitions that might prevent siting such a facility.

8.1 *Proposed GNEP Sites at PORTS*

As has been previously stated, PORTS has a continuing nuclear mission and has a history of providing overwhelming support to the government's successful nuclear energy initiatives. Future nuclear industrialization is a good fit with existing site uses and the workforce in the area. Although SONIC proposed two 500-acre sites on the PORTS site, one site inside the perimeter road and another site on the northeast corner of the reservation, the PORTS site has over 3,700 acres of land that contains existing nuclear facilities with more than 2,000 acres of vacant land to support future construction and new missions and their facilities. With planned deactivation and decommissioning of some of these existing nuclear facilities, even more land could be available. Refer to Figure 6-4, Proposed and Alternative GNEP Facility Locations.

The PORTS site is federally owned and well suited for the GNEP CFTC and the ARR; the sites meet and exceed the minimum siting criteria:

1. Size. PORTS proposed two-500 acre sites and has identified additional land that could be made available
2. Hydrology. The site is well above the 100 year flood plain.
3. Electricity Capability. Electrical power is supplied from Ohio Valley Electric Corporation's external 345 kilovolts (kV) power grid at 345 kV through four switchyards to substations around the site, where the electrical power is stepped down in voltage to 13.8 kV for distribution to the process and other support buildings. The dedicated generating capacity is 2,260 megawatts (MW). The current electrical consumption is about 20 to 40 MW.
4. Population. The population density in Pike County is 63 people per square mile.
5. Zoning. The site is a DOE site used for heavy industrial use.
6. Road Access. Site roads are already built. The site is 3.5 miles south of the intersection of the US Route 23 and Ohio SR 32 interchange. Both routes are four lanes with US Route 23 traversing north-south and Ohio SR 32 traversing east-west.

7. Seismic Stability. There have been no historical earthquakes within 25 miles of the site.

8. Water Availability. The maximum production associated with the well fields is 13 million gallons per day. With the termination of enrichment operations at the site, the current water usage and planned future usage is significantly less than the production capacity. There is also a backup system that can draw directly from the Scioto River in the event the wells are unable to produce sufficient water to meet the site demands.

In addition to the minimum criteria there are additional site features that support siting the CFTC and the ARR at PORTS:

- Railroad infrastructure exists with access to two rail carriers, CSX and Norfolk Southern rail lines.
- Ocean going ships can access Ohio Great Lakes ports. Ohio River barge access is available at Portsmouth.
- The site has existing infrastructure including:
 - Facilities including office space, fire department, health services, and emergency response facilities.
 - Utilities including firewater, water treatment, sanitary waste treatment, electric, steam, stormwater drainage, and cooling towers.
 - Services including emergency preparedness, environmental and radiological monitoring, emergency medical, fire and hazmat responders, and security.
- The four county region of influence has a skilled nuclear workforce with both DOE and NRC regulatory experience.
- Training and education centers offer extensive capabilities – 6 public universities within 75 miles of the DOE reservation, two with nuclear engineering programs; 13 public community colleges within 75 miles of the DOE reservation; Battelle Memorial Institute located 60 miles north in Columbus, Ohio; National Composite Center located 75 miles northwest in Dayton, Ohio; Edison Welding Institute located 60 miles north in Columbus, Ohio; Cincinnati Machining Company located 75 miles west in Cincinnati; and the University of Cincinnati Center of Robotics located 75 miles west in Cincinnati.

8.2 Affected Environment

This section of the document describes the existing conditions at the Portsmouth Reservation based on previous environmental assessments and a nuclear power plant siting study. After an initial overview of the site location and activities, the section presents information on surrounding land use; historic and cultural resources; visual and scenic resources; climatology, meteorology, and air quality; geology, minerals, and soils;

water resources; ecological resources; socioeconomic conditions; environmental justice considerations; noise levels; transportation systems; public and occupational health conditions; and current waste generation and management practices. This review found:

- No historic and cultural sites were found within PORTS boundaries.
- No building within PORTS boundaries were listed on the Ohio Historic Inventory.
- Three properties within 4 miles from the center of PORTS, but not on the site, are listed on the National Register of Historic Places: the Piketon Mounds, the Scioto Township Works, and the Van Meter Stone House and Outbuildings.
- No endangered species have been found in previous site surveys. Habitat for two endangered species was found on the site.
- Approximately 75% of all commercial nuclear generation units in the United States are within one day's travel to PORTS which would reduce the impacts of transporting spent and new fuel to and from the CFTC and existing reactors.

The PORTS Reservation is a fully industrialized nuclear reservation with ongoing DOE missions and the American Centrifuge Plant and the DUF₆ Conversion Facility, industrial applications that will continue for some time. With numerous siting studies performed at the PORTS site since the original construction of the Gaseous Diffusion Plant in 1952, PORTS is a very well characterized in terms of the specific requirements for siting nuclear facilities.

8.3 Community Support

The four counties that make up the region of influence surrounding the PORTS site define the immediate community. This community has historically demonstrated overwhelming support to the government's successful nuclear energy initiatives. This support continues for the current nuclear missions. As part of this initiative, public information meetings were held on March 20, April 9 and April 10, 2007 and were well attended by the local communities. Community support is demonstrated by the letters received from key officials, groups and organizations for inclusion in the *Summary of the Community Involvement Activities* report. These letters demonstrate levels of support from the Governor of the State of Ohio, the State President of the AFL-CIO, deans of educational institutions, other elected officials, businesses, and economic leaders from the local communities within the region of influence surrounding the Piketon plant. Future nuclear industrialization is a good fit with existing site uses and the workforce in the area.

8.4 Regulatory and Permit Requirements

For this study, over 180 statutes and regulations were reviewed for relevance to siting the proposed CFTC and ARR at PORTS. The statutes and regulations reviewed were related to NEPA; cultural resources; ecological resources; environmental protection including air

quality, water quality, pollution prevention, and waste management; hazardous material transportation; chemical and industrial safety; and real property management. The regulations considered federal as well as Ohio requirements. Finally, the document identified the consultations and permits that would be needed, the permits are identified by facility, refer to Table 7-6, CFTC Permits, Authorizations, Notifications or Consultations, and Table 7-7, ARR Permits, Authorizations, Notifications or Consultations.

This review did not identify any regulatory prohibitions that might prevent locating the CFTC and ARR at PORTS. This review considered the options of either DOE or commercial ownership of the facilities and regulation by either DOE as owner or by NRC if DOE or commercially owned.

Although there are no legislative or regulatory prohibitions that might prevent locating the CFTC and ARR facilities at PORTS, there are, however, several issues that have been identified that, if resolved, will simplify the siting, construction, and operation of the CFTC and ARR regardless of where they are sited; these concern chemical safety oversight, Price-Anderson coverage, TRU waste from non-defense facilities, and NESHAPS, refer to Table 8-1 Potential Legislative or Regulatory Prohibitions.

Table 8-1 Potential Legislative or Regulatory Prohibitions

ID	Potential Regulatory Issue	Potential Regulatory Solution
1.	Chemical Safety Regulation and Oversight: It is not absolutely clear whether a DOE owned reprocessing facility operated by or on behalf of DOE would be regulated by NRC and OSHA, regulated by NRC for radiological safety and by DOE for chemical and industrial safety regulations and orders, or regulated entirely under DOE regulations and orders.	Congress in its authorizing legislation could amend Section 202 of the Energy Reorganization Act to specifically identify licensing authority and chemical and industrial safety oversight.
2.	Price-Anderson Coverage: Since both DOE and NRC can provide Price-Anderson coverage to the facility operator, it is not clear whether a DOE-owned CFTC or ABR operated by or on behalf of DOE, if licensed by the NRC, would be covered by DOE or NRC coverage.	Congress in its authorizing legislation could amend the Price-Anderson Nuclear Industries Indemnity Act to specify either DOE or NRC coverage.
3.	TRU Waste generation and Disposal: If the CFTC is DOE owned, the CFTC will generate TRU waste that cannot be classified as defense waste. It may need to be classified as GTCC waste and disposed	DOE may need revision to the WIPP Land Withdrawal Act to allow disposal of all DOE generated TRU waste at WIPP or may need to dispose of this waste as GTCC

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	of at the HLW repository. If commercial facility, the waste is GTCC.	waste.
4.	NESHAPS: If the CFTC and/or ARR are DOE-owned, then there is the potential for both Subparts H and I to apply to these facilities; this results in dual regulation.	Congress in its authorizing legislation could specify that if the facilities are licensed by the NRC and DOE-owned then 10 CFR Part 61, Subpart I would apply to facility radionuclide emissions.

As stated earlier and substantiated by the information provided in this Detailed Siting Study, the Portsmouth DOE Reservation provides an ideal location for supporting GNEP activities.

References

Within this document, there are a number of documents that are referenced. To avoid overlap between the list of references for the document and the summary of major Federal statutes, Executive Orders, Federal and State regulations, and permits relevant to the siting, construction, startup, operation and decommissioning of the proposed CFTC and ARR, the reference list does not repeat the information provided both in text and tables in Section 7. The list of references is further divided into documents cited and referenced. The Section concludes with Endnotes.

Documents Cited

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US DOE	DOE/EIS-0360, <i>Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at Portsmouth, Ohio, Site</i> , June 2004.
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US NRC	<i>Fact Sheet on Biological Effects of Radiation</i> , http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/bio-effects-radiation.html .

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³⁰ US NRC, *Environmental Impact Statement for the Proposed American Centrifuge Plant in Piketon, Ohio*, NUREG-1834, April 2006.

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³² The US Wildlife Service is under a court ordered deadline of June 29, 2007, to decide whether to remove the bald eagle from the endangered species list. Even if removed, the bald eagle is protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

³³ *Nuclear fuel cycle* means the operations defined to be associated with the production of electrical power for public use by any fuel cycle through utilization of nuclear energy. 40 CFR 190, *Definitions*.

³⁴ *Uranium fuel cycle* means the operations of milling of uranium ore, chemical conversion of uranium, isotopic enrichment of uranium, fabrication of uranium fuel, generation of electricity by a light-water-cooled nuclear power plant using uranium fuel, and reprocessing of spent uranium fuel, to the extent that these directly support the production of electrical power for public use utilizing nuclear energy, but excludes mining operations, operations at waste disposal sites, transportation of any radioactive material in support of these operations, and the reuse of recovered non-uranium special nuclear and by-product materials from the cycle. 40 CFR 190, *Definitions*.

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